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DEVELOPMENT DIGEST

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Gordon Donald, Editor; Julia Graham Lear, Associate Editor; Martha Petkas, Editorial Assistant

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PROJECT
APPRAISAL

A GOVERNMENT-OPERATED DRYING AND STORAGE FACILITY WHICH PURCHASES GRAIN FROM FARMERS FOR RE-SALE DURING THE OFF-SEASON
[PHOTO: UNITED NATIONS]

Economic Analysis of Agricultural Projects

J. Price Gittinger

[The following is taken from a textbook used in the Economic Development Institute of the World Bank for teaching agricultural technicians how to make an economic analysis of projects, both for their presentation to international lending agencies (like the World Bank) and for the planning of a national government's investment program. Terms such as opportunity costs, shadow prices, discounted cash flow, net present worth, internal rate of return and sensitivity analysis are defined and their uses explained.]

From its experience with lending for development projects, the World Bank has come to distinguish six aspects of project preparation which it feels should be carefully considered in any project. (1) Technical analysis will concern itself with the inputs of goods and services. Essentially this is an engineering or agronomic analysis, though all pertinent aspects of the technology to be used in a project must be checked out. (2) Managerial and administrative aspects are difficult to evaluate, but they may be the keys to success or failure of a project. In agriculture, our concern must be directed on the one hand to the ability of the project staff to administer such activities as a water project, an extension service, or a credit agency. On the other hand, we are concerned about whether individual farmers will be able to learn how to adopt new practices or cropping patterns. (3) Organizational aspects, as distinct from managerial considerations, are the relationships of the project administration to other parts of

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the government. Are authority and responsibility clearly linked? What about training arrangements? Can disbursements be promptly made? (4) The commercial aspects of a project include the arrangements for marketing the output produced by the project, and the arrangements for the supply of materials and services needed to build and operate the project. Attention to these market conditions is very important in judging agricultural projects. Finally, there are the two aspects of project analysis to which this article is addressed: the financial and the economic.

"Financial analysis" deals primarily with the revenue earning considerations of a project. It is concerned with whether the project will be able to secure the funds it will need and be able to repay these, and whether the project can become financially viable. It is much the same kind of analysis that a banker would give to a loan request from an enterprise with a new project to finance: What are the estimated costs (based on technical analysis); what is the estimated sales income (based on commercial analysis); and (given the estimates of managerial capacity) what is the resulting estimate of probable profit in the operation? There are special considerations involved in agricultural projects, where financial analysis must address itself to two distinct phases. First, it must look at the financial results on individual farms to be certain there will be sufficient farm family income and enough incentive for participating farmers. Second, financial analysis must concern itself with the results for public entities or commercial organizations such as cooperatives, banks or private input distributors.

"Economic analysis" is directed toward determining whether the project is likely to contribute significantly to the development of the economy as a whole, and if the contribution of the project is likely to be great enough to justify the use of the scarce resources which will be needed. In order to obtain an economic analysis, as the term is used here, one starts with the financial analysis of estimated profitability for a private firm and then makes certain adjustments, to be described below, to adapt the results to a "social accounting" for the total economy.

Identifying Costs and Benefits of Agricultural Projects

An extremely useful rule of thumb approach to identifying the overall return arising from an agricultural project is to ask yourself what will be the impact with and without the project. The difference is, in general, the net additional benefit arising from the project. Note that the question is not posed as the difference "before" and "after."

Costs. In almost all project analysis, costs are easier to identify and to value than benefits. Rarely will the goods and services employed in an agricultural project prove difficult to identify. For such things as concrete for irrigation canals, or bulldozers for land clearing, it is not the identification which is difficult but the technical problems associated with planning and design to find out how much will be needed and when. Neither is the labor component of agricultural projects difficult to identify; the labor inputs raise less the question of what kind of labor is needed than of how much. However, the determination of a proper value to place on land in an agricultural project is often extremely difficult. Land costs are the most important case of the need for estimating the net value of production foregone.

In most proposed agricultural projects the land which will be used already produces some agricultural produce. An area to be converted to fruit may now be planted to wheat. If we take the new orchard as an illustration, the whole net value of the fruit crop cannot be considered a net benefit. Rather, to reach the net benefit we must take the net value of the new fruit production and then subtract the net value of the wheat crop—that is, after deducting the value of the labor, seed and fertilizer needed to produce the wheat—since the net value of the wheat which would have been raised on this land will be lost if an orchard is planted. The economic cost of land in agricultural projects grows out of this concept of "opportunity cost."

If there were a perfect market such that economic considerations were the sole determinants of land values (no land market anywhere fits that description), the purchase price of land would be the present worth of the future net contribution of that land to the value of production. In turn, the net contribution of the land to production would be equal to its rental value, since in a perfect market that is the point at which rents would settle. If we wished to use the land for some new purpose in an agricultural project its cost to the economy would be the loss of the net value of production in its present use, and we could express that value either as an annual rent or as a purchase price. Unfortunately markets are not perfect, and we must often use indirect ways of valuing land for project appraisal.

To allow for the value of land in an economic analysis of a project, there are three alternatives:

1) Value the land at its purchase price, entering the cost of land purchase as a lump sum capital item incurred one time only at the beginning of the project. This is the simplest approach; but it assumes that the price of land is a fairly good reflection of the present worth of the contribution that land would make to the value of

the future crops which would have been produced in the absence of the project. It implies, too, that the land market is relatively competitive and open. Both these assumptions are often unwarranted. This may be a good alternative if land actually is to be purchased for an agricultural project; but it might not be appropriate if there is to be only a land use change with no change of ownership.

2) Value the land at its rental cost and enter it into the project accounts year by year as the project proceeds. This would be suitable in a land market where sales were thought to be strongly influenced by non-economic considerations but where there was a relatively competitive market for rental land. This might be a convenient alternative in cases where there was to be no change in ownership or management, but only a new project within a farm. (In a financial analysis, if rent is actually paid then that is the appropriate means to value the land in the analysis; if land is to be bought, the actual purchase price should be used.)

3) Value the land at an estimate of the net value of production foregone—opportunity cost—entered each year as a cost to the project, thus reducing the incremental benefit which is realized. This method of using an "imputed" cost for land is usually the most defensible alternative in economic analysis, but it is not an easy value to calculate. The net value of production foregone is probably also the best way to value land which is publicly owned. When land is to be cleared for new settlement, the production foregone may be so little that it can be ignored or given a zero value.

Taxes and subsidies. Taxes are a transfer payment within an economy which require special treatment in project analysis. In financial analysis, where we are undertaking our analysis from the standpoint of an individual enterprise, all taxes are treated as a cost. In economic analysis, however, where we are considering the return to the whole society, we must allow for the fact that taxes are a return from the project which is turned over to the government to spend on behalf of the society as a whole. Hence, taxes are not deducted from the income stream as a cost in economic analysis. This applies to all forms of taxes: income taxes, duties on imported items, and any local taxes which may be levied.

Subsidies pose a similar problem: They amount to a transfer payment to the project (or to the farmers in a project) from the rest of society. In financial analysis, subsidies raise no problems: the subsidy just reduces cost. In economic analysis, however, we must adjust market prices to reflect the amount of any subsidy. If subsidies operate to reduce input costs, then we must add the amount of the subsidy to the market price of the input in estimating costs. If the subsidy operates to raise product prices, then we

must deduct the amount of the subsidy from the market value of the product before entering it as a benefit in our economic analysis.

Benefits in agricultural projects can arise either from an increased value of output or from reduced costs. Projects can increase physical production: an irrigation project will permit better water control so that farmers can obtain higher yields. A credit project makes it possible for farmers to buy more fertilizer, seeds or a piece of agricultural machinery; the benefit is the increased farm production. Increased production can obviously increase the value of the output of a crop or livestock product providing the market is such that the greater physical volume does not simply trigger a more-than-offsetting fall in price. Most agricultural projects are not large enough in themselves to significantly affect prices so the interrelation of prices and production increases is usually not a problem in project evaluation. It can be, however, where projects are large relative to their proposed market, or where there may be a rapidly growing supply of the commodity to be produced by the project.

In most agricultural projects the increased production will be marketed through commercial channels. Identifying the benefit from commercial production is easy, although there may be problems of valuation when you try to determine the appropriate price. However, in many agricultural projects the benefits may well include increased production which is eaten by the farm family itself. The economic value of this home-consumed production is just as much a real return to the economy as if the production had been sold on the market. Hence, despite difficulties of valuing home-consumed production, it clearly belongs among the project benefits. It is quite possible, however, to have a project in which home-consumed output increases enough that the return to the economy as a whole is attractive in economic analysis, but where so little of the increased output is sold that farmers may not have the cash to repay their loans; in such cases a careful financial analysis must be made to ascertain the project's viability.

Benefits from an agricultural project may take the form of a quality improvement. For example, one analysis of a project to make loans to beef cattle producers in Ecuador assumes that ranchers will increase their cattle production and also increase the quality of their animals so that the average live price of steers per kilogram will rise from 5.20 sucres to 6.40 sucres over a 12-year period. (A word of warning: be careful when estimating quality improvement benefits, since it is easy to overestimate both their rate and extent.) Benefits will also arise from a change in the form of the agricultural product: canners preserve fruit, changing its form and making it possible to increase sales value. Even such a simple processing

activity as a grading shed gives rise to a benefit in higher sales value. Some agricultural marketing projects provide benefits from changes in the location and the time at which the product is sold. A grain storage project may make it possible to hold grain from the harvest period when the price is at its seasonal minimum to a time later in the year when the price has risen. Other marketing activities may include transportation to carry products from the area where they are produced to distant markets where prices are higher. In most cases the increased value arising from marketing projects will be split between farmers and marketing firms. Many projects are structured to assure that farmers receive a larger part of the benefit by making it possible for them to build storage facilities on their farms or to band together in storage cooperatives.

In addition to increased value of output, benefits in agricultural projects may arise from a reduction in costs. Agricultural machinery can reduce labor costs where tubewells substitute for hand drawn or animal drawn water, or tractors replace animal draft power. Total production may not increase, but there is a benefit arising because the costs have been trimmed (providing, of course, that any labor displaced can be productively employed elsewhere). Better transportation may reduce the cost of moving produce from the farm to the consumer. Cost reduction benefits may also arise because of a loss avoided. Projects for irrigation system maintenance or soil conservation may not envision any increase in production, but a benefit arises from the loss of irrigation water avoided or the soil erosion prevented.

There may be other kinds of direct benefits arising from agricultural projects. In agricultural education projects, one means of valuing the benefit is to make an assessment of the increased earning capacity of an agricultural vocational school graduate over what he would have earned had he gone to work with only a primary education. If new housing for farmers has been included among the costs of a project, as is often the case for irrigation and land settlement projects, then among the benefits will be an allowance year by year for the rental value of the housing.

Secondary costs and benefits. A project may bring about indirect benefits or costs to society which do not appear in the project accounts under any category mentioned so far. Identifying and valuing these secondary effects, and deciding which ones should be attributed to the project, has been the subject of a substantial and continuing exchange among economists. This would be important only in economic analysis; the problem does not arise in financial analysis .

The most commonly mentioned secondary benefit in developing countries is that of employment. In the procedure described above

employment appears only as a (labor) cost, not as a benefit. But in many countries substantial unemployment and underemployment exist. By investing in a project, new employment opportunities are created, and new wealth is generated. Further, as newly employed people spend their wages, additional employment is created as new service and production opportunities open up—a "multiplier" effect arising from the project investment which could properly be attributed to the project as a secondary benefit. On the other hand, labor displacing projects might lead to secondary costs. When there is a properly functioning price mechanism—one which accurately reflects the true values of the commodities—the argument in favor of including such secondary costs and benefits in a project analysis becomes highly questionable. But when market prices fail to reflect true costs and benefits, and where there is unemployed or underemployed labor, then project investments can lead to benefits not incorporated into an analysis based solely on market prices.

There are two ways to deal with this in order that projects can be ranked appropriately taking into account both the primary and secondary benefits. The more straightforward and simpler method is to impute a new price for those items which are not properly valued by the price mechanism, and to use these prices—the "shadow" prices discussed later—in the economic (not financial) analysis of the project. This means that at least the largest part of all the effects which can be identified whether "primary" or "secondary" are incorporated directly into the project analysis and imputed as direct benefits to the project investment. Projects can then be ranked by their relative effectiveness in utilizing resources for the total economy, and no further adjustments need be made to allow for secondary effects. This is the method used by most international lending agencies, including the World Bank.

An alternative approach is to increase the benefits measured in market prices by some factor which represents the "multiplier" of the investment. Since different kinds of investments could have varying secondary effects, this adjustment would permit ranking projects according to their overall impact on the economy including both their primary and their secondary effects. It turns out, however, that there are many different kinds of relationships, and it is simplistic to think in terms of "the multiplier," although most discussions tend to make that assumption. The basic approach to analysis of multiplier effects has tended to revolve around the estimation of changes in total output resulting from the secondary impacts on increased expenditures due to a public project. Yet the conditions under which the full multiplier effects of an agricultural project as they are typically estimated would constitute a real net change in welfare are specific and very limiting, and are difficult to find in operation. Attempts to quantify the impact of multiplier

effects have tended to assume that all of these conditions are fully met, and as a result empirical estimates using multipliers have exhibited a consistent tendency to overestimate the real welfare effects of secondary impacts. The practice of the World Bank and that of most other international lending agencies reflects the view that secondary benefits other than those found in cases of severe unemployment are either dubious or relatively unimportant.

Secondary benefits may be important, however, when new roads are to be built into hitherto inaccessible areas. It is argued that the production arising because of the induced investment activities of otherwise unemployed new settlers should be considered a secondary benefit of the road investment. One way of avoiding this problem is to treat the overall land settlement activity, of which the road forms a component part, as the project to be analyzed. New production is then properly included among the direct benefits of the project, and no attempt need be made to allocate the benefits between the road investment and the other kinds of investment which must be made if the settlement is to succeed.

Intangible benefits and costs. Almost every agricultural project has a group of costs and benefits which are "intangible." These may include better income distribution, national integration, national defense, or just a better life for rural people. Such intangibles are real and reflect true values. They do not, however, lend themselves well to monetary valuation, although an attempt is sometimes made. In most cases economic and financial analysis is an inappropriate tool to use for dealing with intangible effects. In any event, the final selection of a project depends on a whole range of considerations, which include subjective judgments, and does not depend on economic analysis alone. The best practice seems to be to acknowledge that intangible effects exist and are important but not to attempt to value them nor include them in the economic analysis computations.

Selecting Proper Values

Once costs and benefits have been identified, if they are to be compared, they must be valued. Underlying all economic and financial analysis is an assumption that the prices used will reflect appropriate values, or can be adjusted to do so. The theoretical basis for judging prices is the following: economists hold that a "perfect" market, one which is highly competitive with many buyers and sellers, will wind up with every economic commodity priced at its marginal value product—that is, the price of every good and service will exactly reflect the value which the last unit utilized of that item contributes to production. Whenever a unit of goods or services can produce more in some other activity, its price will

rise and it will be attracted there. When all its markets are perfect and an economy is in equilibrium, the marginal value products and prices will all be equal. Resources will then have been allocated through the price mechanism to that use where the last unit utilized of every good and service in the economy is at its most productive use; no transfer of resources could result in greater output.

Obviously "perfect" markets do not exist and economies do not remain in equilibrium, so actual market prices do not reflect perfect values. But generally, the best available approximation of a "true value" of a good or service which is traded is its market price. In practical terms, if you can find a market price for an item, that is normally the best price to use in valuing either a cost or a benefit. In financial analysis, of course, you always use the market price or your best estimate of it. In economic analysis, on the other hand, you may feel that some price other than the market price is a better indicator of the value of a good or service to society as a whole, and you may want to substitute a so-called "shadow price." However, the burden of proof is on you: in most instances, it is better to devote your time to trying to find the appropriate market price than to trying to determine a shadow price.

Which market price to use? If some sort of market price is probably the best approximation of the "true" value of a good or service in an agricultural project, which price should we use? Other things being equal, the best place to value the output of a project is at the point of first sale. If the point of first sale is in a relatively competitive market and we can accept the price as a relatively good one (that is, a relatively accurate reflection of its true marginal value product) then this provides a good measure of the value of the output. In agricultural production projects, the point of first sale at which it is generally desirable to value new production (or production foregone) is the "farm gate" price—the price the farmer receives when he sells the product at his farm. The additional value added to the product as it is processed and delivered to a market is not properly attributed to the project investment for production. Farm gate prices are also the best for valuing home-consumed production. If, on the other hand, the project is a marketing project or has a marketing component, we become concerned with both the farm gate price, if that is the input into our marketing project, and the price at which the product is sold in a market. In many cases, however, the only prices which we can find recorded are those in central markets, so analysts will have to estimate the value of the non-project services they include.

During the production process there are often important intermediate goods—items used primarily as an input for some other production process—which are not freely sold. In that case, we

may find we must define our project in such a way as to carry the production process forward to the point of first sale. Irrigation water is a good example. The "product" of an irrigation system is water, which is intended for use in producing agricultural products; the water price is generally determined administratively, not by any play of competitive market forces. If we try to separate out the irrigation system from the production it facilitates, we would be faced with a very difficult problem of determining the value of irrigation water. Hence, it is not surprising most irrigation projects take the value of the agricultural products which are offered on a relatively free market at the point of first sale as the basis for the benefit stream.

Agricultural commodities generally are subject to substantial seasonal fluctuation. If this is the case, then you must make some decision about the point in the seasonal fluctuation at which to choose the price you will use for your analysis. A good starting point is the farm gate harvest price at the peak of the harvest season, probably the lowest price during the annual cycle. The argument here is that as prices rise during the cycle, at least some part of that rise is a result not of the productive activity of the farmer but of the marketing services embodied in storing the crop until consumers want it. But there may be an element of imperfection in the harvest price level, e.g., the need to sell immediately to meet debt obligations may force farmers to offer their crops at artificially low prices. In some cases, therefore, you may wish to select a price higher than the farm gate harvest season price, but there is an obligation here to justify the price chosen as more valid than the harvest price.

For most agricultural projects you will be faced with the task of predicting changes in commodity prices over the years of lifetime of the project. For many crops the likelihood of a relative change in prices is less than the likelihood that relative prices will remain much as in the past; hence, the best general guide to future prices is those of the past decade or so. Only when there is a clear-cut case for changing the relative prices would it seem justified to abandon the assumption that the relative prices of agricultural commodities will remain the same. Future prices for food grains are probably the least difficult to estimate. For a number of other commodities, however, predicting future prices may not prove so easy. Where can one turn for information about future price trends? For domestic food crops, the chances are there will be no systematic studies you can use, and you will have to seek out knowledgeable people and ask them their opinions. In the case of internationally traded commodities, however, there is more help available. Countries which depend on a major export crop probably have a small group somewhere in the government whose responsibility it

is to keep on top of commodity production and price trends. You will also want to turn to the price and production projections of international agencies such as FAO and the World Bank. The major international commodity associations also maintain groups which study production and price trends—the Rubber Study Group and the International Coffee Secretariat are examples. As for the problem of year-to-year price fluctuations, for most economic and financial analyses they should be ignored, and a straight-line trend should be used if long-term change is expected. It is true, of course, that agricultural commodities tend to be subject to rather marked price swings from year to year. But since the measures we use will estimate an average return to capital over the whole of the life of the project, such price fluctuations are averaged out in the analysis.

Most countries have experienced varying degrees of inflation, and the only realistic assessment of the future is that some inflation will continue. This raises the question of how to cope with inflation by project analysis. One way would be to inflate all costs and returns by what you expect will be an average rate of inflation; but this is cumbersome and unnecessary. Much the better solution, if it accurately reflects your expectations, is to assume that all prices on both the cost side and the benefit side will rise uniformly by the same proportion and that therefore they will not change their relative values. Then your analytical procedure can be simply to value all future prices at today's levels—knowing full well that future money prices will rise. But of course, if you expect that inflation will have a different impact on some prices than on others, then your analysis will have to reflect these changes. Such differences might occur, for example, if you think the domestic rate of inflation will be different from that of world inflation; or if you think inflation will affect costs to a different degree than benefits. In such a case, the best procedure probably is to assume constant prices for all items except the ones which you think will be affected to a different degree by inflation; the latter prices can be increased or decreased to reflect your views about inflationary impact.

Shadow prices, which some economists prefer to call "accounting prices," are a very tricky and controversial aspect of the economic analysis of projects. In this brief discussion we will hardly deal with the theoretical problems that are raised; instead I will suggest pragmatic solutions to some problems of shadow pricing applied to agricultural projects. Some theoretical economists will not agree, probably; but we must get on somehow with our project analysis.

For various reasons, markets are imperfect: there may be institutional rigidities, price controls, imperfect information about prices offered by competing sellers or buyers, monopoly elements,

"traditional" prices, and so forth. Because of these imperfections, the use of market prices may introduce a significant error into the economic analysis of a project. The price of foreign exchange may be too low, for example, tending to favor projects with a high import content. Or the wages paid to labor may be too high, tending to favor capital-intensive projects over labor-intensive projects. To avoid these biases in the analysis of projects, we may use instead of the market price a "shadow price" which is intended to reflect the "true" value of the commodity or service. For purposes of operational project analysis, a shadow price may be defined as that price which would prevail in the economy if it were in perfect equilibrium under conditions of perfect competition. But the trouble arises in trying to find out what is the shadow price. Theoretically, it would be possible to work out a giant econometric model for the economy and to use that to define all the prices in the system, but only the most ambitious computer enthusiast would want to embark on such an effort. So, in practice, a much less elaborate approximation of the shadow price is used in project analysis.

In agricultural projects there are generally only three areas where I feel anyone trying to do an economic analysis should consider the use of shadow prices rather than market prices. These are for foreign exchange, for commodities which are important in world markets, and for unskilled agricultural labor.

1) Foreign exchange rates are officially set by most governments, and most buyers pay the official rate for foreign currency. Sometimes there are two or more official rates for different purposes. It is common to find official rates overvalued, that is, a country's currency is worth more at its official rate than it is in free markets (legal or illegal); so at official rates, foreign exchange tends to be undervalued inside the country as compared to its (higher) price in non-official markets. But, when there is an official foreign exchange market where much of the buying is done, the "black market" exchange rates are not perfect prices either. The "true value" is probably somewhere between the official and the black market rates. Rather than trying to deal with the intricate, tricky questions of which exchange rate ought to be used, I would advise agricultural technicians preparing project analyses to use whatever shadow price for the rate of exchange is used by the central planning agency of their country.

2) World market prices. The second kind of shadow price which seems to make good sense in analysis of agricultural projects is the use of world market prices in place of domestic prices in protected markets. World markets, whatever their drawbacks, are more nearly perfect markets than protected markets, and the world price for wheat is more nearly a true measure of the "value" of wheat than

a domestic price. In the last resort, a country could always choose to import wheat rather than to increase domestic production. In deciding which world market price to use for project analysis, the same kinds of considerations noted above will apply: the appropriate grade, the allowance for costs of marketing from the farm gate to the point where the world market price is offered (at the port, for example), any imperfections introduced into the world market by the existence of commodity agreements, and the appropriate exchange rate. Shadow prices for agricultural products should not be limited to those crops which are intended for export. It would seem to me that rice in Malaysia (consumed locally) should be shadow priced at the world market price rather than the higher domestic support price, for the same reason that cocoa (exported) should be shadow priced in Ghana rather than valued at the domestic price depressed by the Marketing Board margin.

3) Labor. The most difficult problem for shadow pricing is unskilled agricultural labor. The price of labor in a perfectly competitive market would be determined by the marginal value product of the labor—that is, the wage would be equal to that amount of product which an extra laborer hired would produce. This is because it would pay a farmer to hire an additional laborer—for harvesting, for example—as long as the worker increases total output by more than the farmer has to pay for the additional labor. If labor is short and there is an active labor market, then the wage rate is probably a fairly good approximation of the real marginal value product of labor. The problem is, of course, that in many crowded countries the addition of one more laborer to the workforce may not add anything at all to the total product. If there is a surplus of agricultural workers, there may be no productive outlet for their energies: if we take labor away from a farm community where it is producing nothing and put it to work producing something, then we do not have to give up any production in order to realize the new product. Its "true" wage is zero because that is what it could otherwise produce. Following this line of argument, the proper price to charge in the economic (not financial!) analysis of projects would be zero. And if the labor in an agricultural project employing a number of unskilled workers is properly priced at zero, then it is likely that the rate of return on this project will look very favorable in comparison to, say, a capital intensive alternative project which uses labor-saving tractors.

Note that the validity of this argument is not changed by the fact that agricultural labor is, in fact, paid a wage. This may well be due to a traditional concept of the proper wage, or to social pressures on the farmers who are better off in a community to share their wealth with their less fortunate neighbors. In parts of Java, for example, social custom prevents even quite small farmers from

harvesting their own rice; instead, they must permit landless laborers to do the work, even though the farmer himself may well have the time to do it. This is seen by the community as a means to provide at least a little something for the poorest families. A common example where a "wage" is paid even though no productive work is available is found in the case of family labor. Older children and the farmer's wife will most certainly be entitled to a share of the family income, even if the family farm is too small to give them an opportunity to be productive very much of the year. If a son were to leave home, the total production of the family farm would not be reduced. If we can help the farmer add a new enterprise or make available irrigation to permit him to double crop, the new production comes at no expense of other production foregone. From the standpoint of the labor, the additional production represents a net addition to wealth at zero cost.

The problem of determining the "true" marginal value product of agricultural labor in an economy is extremely difficult. For purposes of project analysis, this question can be simplified as follows: in some crowded communities the marginal value product of agricultural labor may be so close to zero as to make zero a good approximation of the real value. This would be the case where there is thought to be widespread disguised unemployment, or where family labor cannot be adequately utilized. In these cases, it seems justified to shadow price unskilled agricultural labor at zero. In other communities, there may be a very seasonal pattern to agricultural employment. During the harvest, for example, farmers may not be able to hire enough labor to bring in their crop as fast as they would like to. Under these circumstances, virtually every agricultural laborer can find employment at the peak season—and casual labor from urban areas may return to their home villages to help out. At these peak times, the marginal value product of agricultural labor is not zero. Thus, for purposes of agricultural project analysis, it would seem reasonable to suggest that the price of labor be valued on an annual basis at a price determined by multiplying the wage when labor is scarce by the number of days in a year when labor is reasonably fully employed. For example, where the going wage is Rs. 5 a day and labor is scarce for 50 days a year, the annual wage for unskilled agricultural labor for a project analysis could be shadow priced at Rs. 250, even though it was expected that the labor would actually work 200 days a year and be paid an annual wage of Rs. 1,000. The third position is to value agricultural labor at the wage it commands. This is appropriate in situations where the pertinent labor is steadily employed and where laborers produce additional output worth something near the value of their wage. In this case there is no shadow price.

The case where farmers create their own capital items by direct investment, such as building their own houses, digging their own ir-

rigation canals, or clearing their own land may raise questions about shadow pricing the farmers' own labor at zero. The argument is that the farmer builds his house in his spare time and consumes no more food as a result of his efforts. However, in cases where farmers are working full time to create capital, as they may in land clearing or maintaining perennial crops until they are in production, the normal practice is to value the labor at the consumption level of the farmers. While the value of unskilled agricultural labor may reasonably be shadow priced below the going wage rate, skilled labor probably should not be. In most cases skilled labor is quite scarce, and, indeed, a case may even be made for saying certain kinds of skilled labor should be shadow priced at a level above its wage to reflect its scarcity.

Comparing Costs and Benefits

The basic concept underlying economic and financial analysis of projects is simple: for alternative projects we compare the costs with the benefits to determine which alternative gives us a greater return for our money. However, if our project lasts more than one year, we must find some way to compare projects which have differently shaped future cost and benefit streams. The usual method of comparison is through discounting. We will focus on three discounted measures commonly applied to agricultural projects: benefit-cost ratio, net present worth and internal rate of return.

Length of the project period. How long a period should you cover in an economic analysis? The general rule is to choose a period of time which will be roughly comparable to the economic life of the project. Where the project turns on a fairly sizable initial capital investment, such as a tubewell or an orchard, a convenient starting point for establishing the period of the analysis is the technical life of the major investment item, i.e., the number of years the tubewell will work without replacement or the trees will bear fruit. In some projects, however, you may find that although the technical life of the major investment is quite long, the economic life is expected to be shorter because of obsolescence. This is common in industrial projects and in transportation projects. In most agricultural projects, however, we do not anticipate that rapidly changing technology will make a major investment obsolete over a medium-term period of 20 to 25 years. Where the economic life of the project is not limited by obsolescence and the technical life of the major investment asset extends beyond 25 years, another consideration comes into play. This is the rate of discount for reducing future values—both costs and benefits—to their equivalent in present values (see below). At the kinds of discount rates we will be using and the kinds of opportunity costs for capital we think exist in developing countries, any returns to an investment beyond about

25 years probably will make no difference in the ranking of alternative projects. As a result, few agricultural project analyses need be carried out beyond 25 years.

Time value of money. If we lend our money to someone to use, we can normally expect to be paid interest for the use of that money. In the same manner, banks, cooperatives and credit unions will pay interest on savings deposits. Economists generally explain interest as arising from one of two reasons. One explanation is that if we lend money to someone else, we are deferring until the future the possibility of using that money for present pleasures. If we do this, we are entitled to a reward, and interest is that reward. Another explanation is that interest is related to current income foregone. If a farmer lends money to his neighbor, the farmer is passing by the opportunity to use that money for some productive purpose—say, to increase his own fertilizer use. On the other hand, his neighbor is gaining the use of the money to put to a productive purpose, perhaps to increase the amount of fertilizer he applies. It is only reasonable that the lender be compensated for the income foregone and that the borrower pay something for his use of the lender's money.

Now, let's note two accounting conventions. The first is that interest is generally stated on an annual basis. If we say a loan is made at 5 percent, it is implied that we mean 5 percent a year though the loan may be for longer or shorter periods. The second accounting convention is that the money is borrowed at the beginning of the period (say, January 1, 1973) and returned on the last day of the period (say, December 31, 1973). It should also be noted that we will be dealing with interest rates on the basis of compound interest.

Present worth (discounting). If a borrower promised to pay us $1,000 at the end of five years assuming an interest rate of 9 percent, how much is the promise worth to us today? Put another way, what is the present worth of $1,000 five years in the future assuming the interest rate of 9 percent? To determine that, we must divide the amount due by 1.09 each year. The present worth of a future income of $1,000 five years hence comes to $650. This calculation is exactly upside down from the usual calculation of compound interest. This process of finding the present worth of a future income is called "discounting." The interest rate assumed for discounting is the "discount rate." The only variation is the point of view: the interest rate assumes looking from here to the future, while discounting looks backward from the future to the present.

Now, instead of someone proposing to pay a single amount in some future year, suppose we are to receive a stream of income for a period of years. What would be the present worth to us today of

that stream of future income? This is a common question, since an investment in a development project will return benefits in each of several years, and we need to know what the present worth of that future stream of income is in order to know how much we are justified in investing today to receive that stream of income. In order to resolve this question, we will need to know the interest rate, the period of time we are talking about, and, of course, the amount of the income stream. Thus, the present worth of a stream of income of $6,438 received each year for nine years, assuming a discount rate (a rate of interest) of 15 percent, is $30,722. That is, the present worth is the sum of all the present worths for all the years added together. (The total undiscounted dollar value of the income stream is $57,942, but the "present worth" is not that amount.)

Benefit-cost ratio. We may turn to the first of the discounted measures of project worth in common use: the benefit-cost ratio.

$$\frac{\text{Present worth of benefits}}{\text{Present worth of costs}} = \text{Benefit-cost ratio}$$

This ratio is used almost exclusively as a measure of social benefit—that is, for economic analysis as we have defined it—and most commonly for water resource projects. It is almost never used for private investment analysis.

We may illustrate computation of the benefit-cost ratio with the simple irrigation example set out in Table 1. We will assume a small earth fill dam is to be built over the period of two years for a total cost of $13,500,000. After that, there is an annual operation and maintenance cost. To keep this illustration from becoming cumbersome, we will only carry through the analysis for seven years. At the end of seven years, of course, the dam will not be used up; to allow for this, we will consider that the dam at that point has a "salvage value" of $331,000. The salvage value is treated as a "benefit" in the last year of the project.

To compute the benefit-cost ratio, we must decide upon the discount rate to be used. In general, there are two discount rates which might be chosen and a third which is sometimes proposed. Probably the best discount rate to use is the "opportunity cost of capital"—that is, the marginal profitability of investment elsewhere in an economy (given the total available capital). Although good as a theoretical definition, this is difficult to apply as a practical working tool: no one knows what the opportunity cost of capital really is. In most developing countries it is assumed to be somewhere between 8 and 15 percent, and for our example we will assume the opportunity cost of capital to be 12 percent. Another discount rate often chosen for the benefit-cost ratio calculation is the

borrowing rate for the project which is to be financed. This has the undesirable result, however, that the selection of projects will be influenced by the financing terms available rather than being based solely upon their relative economic impact. A third rate sometimes suggested is the "social rate of return," a rate which more adequately reflects the time preference of the society as a whole. Although interesting in theory, it is too difficult to identify in practice to be commonly used for project analysis.

If we want to use discounting to help us compare the cost and benefit streams of our small dam project, we must first discount each stream in order to find its present worth. This is done by multiplying both sets of values by the discount factor (D. F. in the table) for each year at the chosen discount rate (12%). Dividing the present worth of the gross benefits by the present worth of the gross costs we find the benefit-cost ratio. Thus,

$$\frac{\text{Present worth of gross benefits}}{\text{Present worth of gross costs}} = \frac{\$17,394,000}{\$15,217,000} = 1.1$$

Another way of summarizing the results of this discounting calculation is to estimate the net present worth of the project, i.e., the difference between discounted benefits and discounted costs. In the example this comes to $2,177,000.

Note that the value of the benefit-cost ratio will vary depending on the interest rate chosen. The higher the interest rate, the smaller the resulting benefit-cost ratio, and if a high enough rate is chosen the benefit-cost ratio will be driven down to less than one. If the benefit-cost ratio worked out to be less than one, we would have a case where at the discount rate assumed the present worth of the benefits is less than the present worth of the costs and one is not recovering his investment. It would be better to put the money in a bank at the assumed interest rate than to invest it in the project.

When the benefit-cost ratio is used to evaluate projects, the formal decision criterion is to accept all projects with a ratio of one or greater. Although in practice projects with higher benefit-cost ratios are often regarded as being preferable (other things being equal), a ranking by benefit-cost ratio can lead to an erroneous investment choice. The benefit-cost ratio may discriminate against large projects with relatively high gross returns and operating costs, even though these may be shown to have a greater wealth generating capacity than alternatives which have a higher benefit-cost ratio. Net present worth figures, however, will usually favor the larger projects.

Discounted cash flow measures. Another way to estimate the worth of a project is to subtract the costs from the benefits on a

Table 1: Analysis of Earth Fill Dam Small-Scale Irrigation Project
Illustrating Computation of Benefit-Cost Ratio
(Thousand United States Dollars)

Year	Project Costs: Capital Items	Project Costs: O & M[a/] Costs	Project Costs: Production Costs	Project Costs: Gross Costs	D.F.[b/] 12%	Present Worth 12%	Total Value of Production (=Gross Benefits)	D.F.[b/] 12%	Present Worth 12%
1	$ 7,500	$ 0	$ 0	$ 7,500	.893	$ 6,698	$ 0	.893	$ 0
2	6,000	0	0	6,000	.797	4,782	0	.797	0
3	0	600	700	1,300	.712	926	6,000	.712	4,272
4	0	600	700	1,300	.636	827	6,000	.636	3,816
5	0	600	700	1,300	.567	737	6,000	.567	3,402
6	0	600	700	1,300	.507	659	6,000	.507	3,042
7	0	600	700	1,300	.452	588	6,000	.452	2,712
-	-	-	-	-	-	-	331[c/]	(.452)	150
Total	$13,500	$3,000	$3,500	$20,000	4.564	$15,217	$30,331	4.564[d/]	$17,394

Benefit-cost ratio at 12% = $\frac{\$17,394,000}{\$15,217,000}$ = 1.1; Net present worth at 12% = $17,394,000 - $15,217,000 = $2,177,000

a/ Operation and maintenance.

b/ Discount factor.

c/ Salvage value.

d/ The sum is the discount factor for each year totaled; hence, the value of .452 for the seventh year is included only once.

year-to-year basis to arrive at the incremental net benefit stream—the so-called "cash flow"—and then to discount that. When we look at a project we can see it as earning a stream of gross benefits from which we must deduct the capital investment and pay the other input costs—the machinery, fertilizer, pesticides, labor, management, consultants, and the like. What is left over is a residual (which will be negative in the early years of the project) and which is available (1) to recover the investment made in the project—the return of capital (equivalent to depreciation); and (2) to compensate for the use of the money involved in the project—the return to capital (i.e., profits). This residual is termed the cash flow.

In financial analysis, when accountants use the term "cash flow," they normally mean the sum of the profits plus the depreciation allowances, usually after payment of taxes. There are two important differences in the manner in which we derive the cash flow when we are carrying out an economic as opposed to a financial analysis. In economic analysis, taxes and duties are not deducted from the benefit stream when deriving the cash flow as the basis on which to compute the productivity of capital. The second difference is that in financial analysis we generally must account for outside capital borrowed by the entity which is undertaking the project. When borrowed capital is received it is normally entered into the receipts stream as a kind of "benefit" received. Then, when a payment of interest or a repayment of principal is made to the outside supplier of capital, it is deducted from the gross return as a cost in deriving the cash flow. In economic analysis these transactions are omitted because of our assumption that all resources employed in the project belong to someone within the society, and hence there are no "outside" suppliers of capital.

Internal rate of return. Another way of using discounted cash flow for measuring the worth of a project is to find that discount rate which just makes the net present worth of the cash flow equal to zero. This discount rate is termed the internal rate of return and, in a sense, represents the average earning power of the money used in the project over the project life. Internal rate of return turns out to be a very useful measure of project worth. It is the measure which the World Bank uses for practically all its economic and financial analyses of projects, as do most other international financing agencies. In order to avoid confusion between the use of internal rate of return in economic analysis and the use of the same technique in financial analysis, the World Bank has adopted a distinguishing terminology. When the internal rate of return is used in economic analysis, the result is termed the internal economic return; in financial analysis it is called the internal financial return.

To see how the internal rate of return is calculated, we may look again at the small scale irrigation project for which we derived the cash flow in Table 1. This time, however, instead of discounting at 12 percent, let's discount at 18 percent. By selecting the 18 percent discount rate we drive the net present worth of the project down to zero. Put another way, at a discount rate of 18 percent, this project just breaks even—that is, it will earn back all the capital and operating costs expended upon it and pay us 18 percent for the use of our money in the meantime. In real life one cannot, except by a lucky accident, just choose out of thin air that discount rate which will make the cash flow equal to zero (as we did for illustrative purposes). Unhappily, there is no formula for finding the internal rate of return; we are forced to resort to trial and error, although there are some devices for making estimates of the nearest percentage figure. Internal rates of return should be rounded to the nearest whole percentage point, since the underlying projections can never justify the implication of greater precision.

The formal selection criterion for the internal rate of return measure of project worth is to accept all projects having an internal rate of return above the opportunity cost of capital. Projects are ranked in order of the value of the internal rate of return. The lowest acceptable internal rate of return is often termed the "cutoff rate," and normally is set slightly above the opportunity cost of capital.

Applying Discounted Measures of Project Worth

When you turn to applying discounted measures of project worth for economic and financial analysis of proposed projects you may run into some practical questions about their use. Several of these are considered here.

Sensitivity analysis (treatment of uncertainty). One of the real advantages of careful economic and financial analysis of a project is that it may be used to test what happens to earning capacity if something goes wrong. How sensitive is a project's internal economic or financial return to increased construction costs? To a stretchout in the implementation period? To a fall in prices? Reworking an analysis to see what happens under these changed circumstances is termed sensitivity analysis. It is one means of trying to deal with a key reality of project analysis: the fact that projections are subject to a high degree of uncertainty about what will happen.

All projects should be subjected to sensitivity analysis. In agriculture there are four main kinds of sensitivity analyses which should be considered. (1) Prices. Probably every agricultural

Table 2: Analysis of Earth Fill Dam Small-Scale Irrigation Project
Illustrating Interpolation to Estimate Internal Rate of Return
(Thousand United States Dollars)

Year	Gross Costs	Total Value of Production (=Gross Benefits)	Incremental Benefit (=Cash Flow)	D.F. [a] 18%	Present Worth 18%	D.F. 15%	Present Worth 15%	D.F. 20%	Present Worth 20%
1	$ 7,500	$ 0	$- 7,500	.847	$-6,352	.870	$-6,525	.833	$-6,248
2	6,000	0	- 6,000	.718	-4,308	.756	-4,536	.694	-4,164
3	1,300	6,000	4,700	.609	2,862	.658	3,093	.579	2,721
4	1,300	6,000	4,700	.516	2,425	.572	2,688	.482	2,265
5	1,300	6,000	4,700	.437	2,054	.497	2,336	.402	1,889
6	1,300	6,000	4,700	.370	1,739	.432	2,030	.335	1,574
7	1,300	6,000	4,700	.314	1,476	.376	1,767	.279	1,311
-	-	331 [b]	331 [b]	(.314) [c]	104	(.376) [c]	124	(.279) [c]	92
Total	$20,000	$30,331	$ 10,331	3.811	$ 0	4.161	$ 977	3.604	$- 560

Internal rate of return (internal economic return) $= 15 + 5\left(\frac{977}{1,537}\right) = 15 + 3.2 = 18\%$

a/ Discount factor.

b/ Salvage value.

c/ Omitted from total to avoid double counting.

project should be examined to see what happens to its profit-ability if the price assumptions prove wrong. For this you can make alternative assumptions about future prices and see how these affect the internal economic and financial returns. You could also examine a project to see what would be the impact on the internal economic return if you use the going wage for labor or a shadow price, and the official foreign exchange rate or a shadow price for foreign exchange. If your project turns out to be relatively insensitive to shadow pricing, it is probably better to present your analysis in terms of the money prices and to note that the internal economic return is relatively insensitive to shadow prices. (2) Delays in implementation. Most agricultural projects are subject to delays in implementation. Farmers may fail to adopt new practices as rapidly as anticipated. They may find it harder to master new techniques than we had thought, etc. Testing to determine the impact of delay on the internal economic and financial returns from a proposed agricultural investment is important. (3) Cost overrun. In those agricultural projects which involve significant construction costs, the project should be tested for its sensitivity to a cost overrun. (4) Yields. You may wish to test a proposed project for its sensitivity to errors in yield estimates. There is a tendency in agricultural projects to be optimistic about potential yields, especially when a new cropping pattern is being proposed and the agronomic information is based mainly on experimental trials.

The technique of sensitivity analysis is not complicated: you just do the calculation of the measure of project worth over again using the new estimates for one or another element of cost or return. To illustrate, consider the Djatiluhur Irrigation Project in Indonesia: the project was tested for its sensitivity to a 30 percent cost overrun and to a 10 percent fall in the price of rice. The 30 percent cost overrun caused the internal economic return to fall by about 29 percent, while the 10 percent fall in the price of rice caused the return to fall by about 14 percent. Whoever must make the project decision may now ask himself: "Am I willing to run the risk of that large a drop in the internal economic return, given how likely I think the cost overrun or the lower price is?"

Contingency allowances. Cost estimates for the investment period of a project generally are prepared on the assumption that there will be no modifications in design which will lead to changes in the physical work required; that there will be no exceptional conditions such as an unanticipated underground geology; and that there will be no adverse phenomena such as floods, landslides or unusually bad weather. Normally, too, project cost estimates assume there will be no relative changes in domestic or international prices during the investment period, and that the general price level will not rise. Clearly, it would be unrealistic to rest project cost estimates

simply on these assumptions of perfect knowledge and complete price stability. Sound project planning requires that provision be made in advance for possible adverse physical or price changes by including contingency allowances as part of the project cost estimates.

Contingency allowances may be divided between those which provide for physical contingencies and those which provide for price contingencies. In turn, price contingency allowances may be divided between those which are intended to provide for relative changes in prices and those which are intended to allow for general inflation. Physical changes and relative price shifts may be expected to occur, even though it cannot be forecast with any confidence just how their influence will be felt. These contingency allowances, then, are expected project costs and properly form part of the cost base when computing the internal financial and economic rates of return or other measures of project worth. Inflation, however, poses a different problem. If inflation is expected to be significant, provision needs to be made in preparing the project financing plan for the effects of a general price rise on project costs so that adequate budget funds can be anticipated and the project will not be subject to delay. Inflation contingency allowances which would then be included in the financing plan should not, however, be included among the costs when estimating the internal financial or economic rate of return.

Contingency allowances are best shown separately in project tables, with appropriate explanations of how they were arrived at in the accompanying text and notes. To avoid double counting, any contingency allowances already included in the basic material used to prepare the project analysis should be eliminated. Physical contingency allowances are normally estimated separately for each major category of cost and separately for local and foreign exchange costs. Projects which include large civil engineering works require higher contingency allowances than projects which cover only the supply and erection of equipment. Contingency allowances are normally not included for the operating costs of a project once the initial investment stage is passed. Rather, such problems as higher-than-anticipated production expenditures are normally dealt with by the use of sensitivity analysis. In agricultural credit projects, it is generally not necessary to include contingency allowances; contingencies in this field will normally be treated in the discussion of the economic justification of the project.

Replacement costs. Many agricultural projects require investments which have different lives. A good example is found in the case of a pump irrigation scheme where the earthworks and pump platforms may be expected to last 30 to 50 years, but where the pumps themselves may have a life of only 10 to 15 years. In preparing the analysis, allowance must be made for the replacement

costs of the pumps during the life of the project. Replacement costs are then included in the capital items column for the appropriate year in your project analysis. In net present worth and internal rate of return analysis you then net them out when you compute the cash flow (this may make the cash flow for that year negative).

Sunk costs are those which have been expended in the past on a project. When we consider a project expenditure, it is only future returns for future costs which are the basis for our decision. Our decision starts from today; what is past is past and cannot be changed. The argument that much has already been spent on a project and therefore the project must be continued is not a valid decision criterion. In practice, of course, if you have already spent a considerable amount on a project, you probably will find that the future returns to the future costs of finishing the project will be quite attractive. But there may well be cases where a questionable project is midway toward completion and it would be better simply to stop the project or draw it to an early conclusion, and then use the future expenditures freed from the project for higher yielding alternatives. For this kind of situation, discounted measures of project worth are a useful tool and provide valid guides to project decisions.

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A Guide to Little/Mirrlees

George B. Baldwin

[A method of analyzing the costs and benefits of industrial projects has aroused much interest and debate, particularly about the extent to which it is new. A World Bank economist gives his own views.]

Two well-known Oxford professors, Ian Little and James Mirrlees, have written a manual on industrial cost-benefit analysis which has stirred up a lot of interest and a fair amount of debate. The Little/Mirrlees manual is Volume II of the Organization for Economic Cooperation and Development's two-volume Manual of Industrial Project Analysis in Developing Countries, with the subtitle "Social Cost-Benefit Analysis" (Paris: OECD, 1969. Page references are to Volume II of the Manual). Some important development agencies have already announced adoption of the Little/Mirrlees approach: these include Britain's Overseas Development Administration, West Germany's Kreditanstalt für Wiederaufbau, and the United Nations Industrial Development Organization. The World Bank Group has studied Little/Mirrlees to see whether any closer move toward it would be a useful refinement of present methods, which are already close to theirs.

The Manual's central message can be simply stated. A valid assessment of an industrial project's worth to an economy (i.e., an economic analysis) often requires the use of values that differ from the market prices used in the normal kind of business or financial appraisals. The particular shadow prices which Little and Mirrlees believe should be used are "world prices."

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The resulting streams of annual costs and benefits should then be weighted (discounted) to reflect the differing times when they will occur. Economists will recognize that Little and Mirrlees are relying on the familiar discounted cash flow method, using shadow prices, to test for a project's net present worth.

Thus the basic approach of the Manual is not new. The major innovation put forward by Little and Mirrlees—the idea that has stirred up most of the interest and most of the controversy—is their notion that all prices used in project calculation should be world prices. They are not satisfied with the procedure followed by many institutions (including, normally, the World Bank Group) whereby partial use is made of international values, e.g., applying them to major inputs and outputs that are or easily could be traded. They argue in favor of valuing all inputs at world prices, even the so-called non-traded inputs that normally cannot possibly be imported such as construction, local transport and labor. The reason Little and Mirrlees want to go all the way in using world prices for every input and output is to avoid the distortions which they feel creep into the calculations if only partial use is made of world prices. A cost-benefit calculation based partly on world prices and partly on domestic prices has to be put into a single currency through the use of an exchange rate. Little and Mirrlees don't like exchange rates, not even "shadow" exchange rates based on correcting unrealistic official rates. In their view, no exchange rate, no matter how good, can overcome the distortion in relative values which arises whenever you combine values taken from different sets of prices. In the world as we find it, protection and other trade restrictions are everywhere, and many exchange rates now serve to distort rather than to preserve true relationships between domestic and world values. Little and Mirrlees want to avoid using some good prices (world prices of traded items) and some not-so-good prices (the domestic prices of non-traded inputs), which must then be merged by use of a (frequently bad) exchange rate. If all values can be measured in world prices, the problem is solved. But some of their critics say the cure is worse than the disease.

Why World Prices?

Little and Mirrlees advance both pragmatic and theoretical reasons for wanting to anchor all cost-benefit values in world prices. Their pragmatic reason is that world prices represent actual trading opportunities, which heavily influence domestic investment decisions. Every industrial investment decision involves a "make or buy" decision: "If you can get more refrigerators by exporting bicycles to pay for them, than by diverting resources from making bicycles to making refrigerators at home, it is clearly right to make and export the bicycles and import the refrigerators. But whether this is in fact

the case, requires a knowledge both of the relative costs of production at home, and of world prices and market conditions" (p. 85). The reason for relating everything to world prices is not because they are "more rational" than domestic prices, but because they represent the terms on which the country can actually import, so a decision to produce is judged by the "opportunity cost" of not importing. The development process involves a steady expansion of the demand for imports, and the only way to pay for them, in the long run, is to produce for export only those things a country can produce best. To make the most of its opportunities a country must deploy its resources in ways which give it the most for its money, i.e., the most foreign exchange (either earnings or savings) for domestic resources used.

So it is logical to argue that all internationally traded goods—i.e., those which the country could actually import or export, regardless of whether the project itself will do so—should be valued at their c.i.f. (for imports) or f.o.b. (for exports) prices. But what should we do with non-traded inputs and outputs? The main non-traded inputs are domestic transportation, construction, electricity, land and labor; other minor ones can be thought of, e.g., water and waste disposal, telecommunications, advertising, banking services, maintenance and repair services. Little and Mirrlees say that since traded goods are valued in world prices, non-traded goods must be similarly valued; "only thus can we ensure that we are valuing everything in terms of a common yardstick." All methods of project appraisal require the use of a common currency, but only Little/Mirrlees requires the use of both a common currency and a common source for all values used. Once all values are established in terms of world prices, it does not matter for project selection whether they are left in U.S. dollars or converted into domestic rupees (the two illustrative currencies used in the Manual). If a complete set of costs and benefits are converted from dollars into rupees any exchange rate can be used, since all values will retain the same relationship to each other.

Using Input/Output Analysis to Chase Down Non-Traded Items

It is not easy to value the non-traded inputs in world prices. The only way to do this in a complete and theoretically consistent manner is to chase down all the inputs used by a project, direct and indirect, until all the potentially tradable items have been valued in world prices, leaving only land and labor. Land is dismissed as relatively unimportant in most industrial projects. In valuing labor, Little and Mirrlees argue that even labor's own inputs (i.e., its consumption) should be valued in terms of world prices.

The general procedure is to take each project input (power, construction, transport or labor) and break it down into its own inputs;

these in turn will consist of items that are traded and items that are non-traded. The latter are in turn broken down into traded and non-traded items, etc., etc. The only way this chain can be followed back very far is through a detailed input/output table for the economy as a whole. Few less developed countries have in existence a table that is detailed enough to permit the needed calculations for more than a few simple industries. If no such table is available, rough-and-ready approximations to world values can be used. These approximations or "conversion factors" are based on the ratio of domestic costs of a representative sample of, say, construction items (wood, cement, steel, fuel, etc.) to the world price of these items. This ratio is based on using the official exchange rate; the reciprocal of the ratio is then used to adjust the domestic cost of non-traded inputs to values closer to what they would be if the complete input/output method had been rigorously followed. This conversion factor is in effect a way of correcting for the overvaluation of an exchange rate; however, it does it on an average basis and not with the precision theoretically achievable if all non-traded inputs could be decomposed into their ultimate traded elements which could then be valued in world prices.

The Price of Labor

Most of the labor used in industry comes from a labor-surplus rural sector, and its departure involves little or no loss of agricultural production, i.e., its opportunity cost (equal to its marginal productivity) is typically very low. However, industrial labor is usually paid considerably more than the agricultural subsistence wage. Some of this excess over what labor could earn in agriculture is a necessary cost of making it available at industrial locations; but some of the excess is an artificial creation of trade union policies, high minimum wage laws or employer "softness" in relation to what he could pay if he wanted to pay no more than a competitive wage. So the proper domestic price for valuing labor is a shadow wage that lies somewhere between its actual market rate and an agricultural subsistence wage. A good deal of judgment is involved in settling on a figure (since the cost stream stretches over many years, there is no reason for using a constant shadow price throughout the project life if there is any reasonable basis for varying it).

But Little and Mirrlees do not let the domestic shadow price of labor determine its value in project costs. A domestic shadow price reflects only labor's relative scarcity in the domestic economy; once this has been estimated, this domestic value must then be converted into a world price. In theory this can be done—as explained above—by decomposing labor's consumption into traded items. But in practice, either a specific conversion factor or the standard conversion factor would almost always be used.

Adjusting for a Project's
"Commitment to Consumption"

With nations, as with individuals, there is a never-ending tug-of-war between consumption and savings. The ultimate purpose of all economic activity is to raise living standards, which means raising consumption. But it is non-consumption out of present income (savings) which provides the resources for the investment necessary to assure higher consumption tomorrow. Little/Mirrlees have an unusually clear discussion of this classical problem, although their operational advice seems unnecessarily complicated.

A dollar's worth of future consumption is never worth a full dollar to us today. The specific rate at which future consumption is discounted is called the consumption rate of interest. This is not the discount rate Little and Mirrlees use in discounting cost-benefit streams. Why not? Because projects generate future savings as well as future consumption. Indeed, Little and Mirrlees believe that savings are so difficult to generate, and so important to future consumption, that the main test of a project's economic merit in almost all less developed countries should be its ability to generate savings. There is no reason why future savings should carry the same discount rate as future consumption. So it may look at first as though future consumption will have to be discounted at one rate and future savings at another. To avoid this, Little/Mirrlees revalue future consumption in terms of savings: this gives us a unified benefit stream, a "cash flow" stripped of its consumption elements so that it represents only savings. These can then be discounted at a single rate; the rate at which savings are discounted is called the "accounting rate of interest" (ARI). This is the discount rate to use in calculating the present worth of a project's cost and benefit streams.

The social income stream (consumption plus savings) to be generated by a project is stripped of its consumption element by taking the consumption element out of both labor income and returns to capital. On the labor side this adjustment is made automatically by defining labor's cost in terms of its consumption only. Since only this consumption cost is deducted from project income, anything labor saves remains in the net benefit stream. The elimination of consumption from the returns paid to the owners of capital is accomplished by applying to the project's estimated incremental capital income an estimate of the general marginal propensity to consume of those who receive interest and dividends. For some reason no offsetting allowance is made for any extra government consumption which may result from tax revenue generated by a project.

Thus the use of a shadow price for labor increases the benefit stream, while the adjustment for consumption out of profits re-

duces the stream: one wonders how near the truth one would be if neither of these offsetting adjustments were made! But at least Little/Mirrlees give us a complete lesson in why a "commitment to consumption" is bad and how they think it ought to be eliminated from the cost-benefit calculation.

What discount rate to use? As noted, in the Little/Mirrlees system (as in many others) the investment test used is a project's present social value (PSV, equal to "net present worth" in economic analysis), the difference between the present values of the benefit and cost streams. These present values are, of course, critically dependent on the discount rate used; different rates can change not only the size of the present social value but can make a positive value turn negative. So the specific ARI is important. The Little/Mirrlees rule for choosing the right discount rate is the same as that used by many others, including the World Bank Group: ". . . the accounting rate of interest should be kept as high as possible consistent with there being as much investment as savings permit" (p. 96). Little and Mirrlees think most developing countries ought to use a rate around 10 percent in real terms, i.e., after inflation; some countries might use even 15 percent. Rather than worry about the exact correctness of the ARI, Little and Mirrlees sensibly suggest the trial use of three rates—high, low, and medium—to sort out the "obviously good" and the "obviously bad" projects, with marginal ones to be put off until the authorities see how large the investment program will be and whether any clearly better projects come along to displace the marginal candidates.

Assessment

One of the attractive features claimed for the Little/Mirrlees approach is that it provides a comprehensive project evaluation test. Once it is determined that a project has a positive PSV when world prices are used, one can be confident that it will in principle fulfill all important economic objectives for which projects are often specifically tested. This applies to a project's impact on the balance of payments, on employment, and on society's claims for future consumption. By valuing all project inputs and outputs at world prices, "import-substitution and exporting is encouraged to the maximum desirable extent. . . .the right way to control the balance of payments is to concentrate on high-yielding projects, and not to try to do more investment than saving, tax policies, and foreign aid, allow." By valuing labor's shadow wage also in terms of foreign exchange (which may put a lower value on labor's consumption inputs than domestic prices do) "producers are encouraged to use labor, instead of imported inputs, to the maximum desirable extent." Finally, as we have seen, the problem of balancing consumption today against consumption tomorrow is handled by use of

a shadow wage rate—e.g., a low shadow wage encourages labor-intensive projects, the main expression of consumption today over consumption tomorrow.

But Little and Mirrlees do not expect their Manual to give individual project analysts everything they need to go out and make valid cost-benefit studies of industrial projects. They acknowledge that they have really written a textbook of appraisal theory, not a how-to-do-it manual for managers on the firing line. Furthermore, the testbook is meant for the education and guidance of a small group of high-powered economists who, the authors hope, will be found presiding over development planning at the center of things in every country. They urge every country to prepare a much shorter manual of its own, telling ministries and development banks how to do economic cost-benefit studies and giving them the necessary accounting prices. Britain's Overseas Development Administration has prepared just such a manual for its own use.

The weakest—and certainly the most contentious—of the various steps recommended by Little/Mirrlees is the extent to which they go in using world prices. To use them for all cost and benefit values involves a lot of trouble for a doubtful advantage. It is a lot of trouble because of the need to use input/output data that usually do not exist with nearly the accuracy needed to yield accurate results. There seems little advantage in substituting the distortions of bad input/output data, or the approximations of conversion factors, for those arising from overvalued exchange rates. In most countries, it appears far simpler and sufficiently accurate to use world prices for the actually traded major capital and current inputs and for the outputs and to use domestic factor costs (at shadow or market prices as appropriate) for the non-traded inputs; and then to convert these foreign and domestic values into a single currency using any reasonable exchange rate if the official rate is felt badly out of line.

In a majority of industrial projects distortions in the values of non-traded inputs simply will not be important. Electricity rarely comprises more than 4-5 percent of manufacturing costs, so a 20 percent distortion of its value will affect total costs by only one percent. Distortions in internal transport costs for capital and operating costs are unlikely to be much greater. The construction element in plant capital costs is larger and may run 15-30 percent, at least half of which will consist of labor costs. The distortion arising from using domestic currency to price labor's shadow wage is likely to be less than the margin of error inherent in deciding what shadow wage to use. Thus, when one looks at the relative unimportance of all the non-traded inputs, except labor, refinements in these values begin to look relatively unimportant. Labor operating costs, which are important in most industrial or agricultural projects, can

be handled satisfactorily by sensitivity analysis, i.e., by trying two or three different values to see how much difference it makes to the final result.

Cost-benefit analysis simply does not work to the order of precision to which Little and Mirrlees want to take us. I cannot help concluding that the most novel feature of the Little/Mirrlees methodology—the world pricing of non-traded inputs that has caused so much argument—is a theoretical refinement without practical usefulness. There is plenty of wisdom in the basic Little/Mirrlees approach without trying to make everything depend on their controversial method of valuing a project's non-traded inputs.

[Excerpted from "A Layman's Guide to Little/Mirrlees," Finance and Development. Washington, D.C.: International Monetary Fund and International Bank for Reconstruction and Development, Vol. 9, No. 1, March 1972, pp. 16-21.]

Comparison of Project Estimates with Realizations

Adrianus G. H. Otten and
Shlomo Reutlinger

[This paper reports on a study of some performance aspects of eight World Bank-financed irrigation projects. Primarily, the study was intended to compare anticipated and realized construction costs and schedules and to measure differences in terms of their impact on originally anticipated rates of return. The only source of data used in the investigations was information in project appraisal and supervision reports and in reports from project authorities on file.]

A study of eight World Bank irrigation projects indicates that construction costs are usually higher than anticipated and execution of construction falls behind schedule. The combined effect on these is to reduce originally anticipated net benefits. However, the initial overestimation of anticipated net benefits, as estimated by the internal rate of return, is no more than 10 to 20 percent. If the usually applied contingency allowance were disregarded, the overestimation would be somewhat more pronounced. Until the appraisal of cost estimates is improved, the contingency allowance must be regarded, therefore, as a means, however imperfect, for adjusting appraisal biases, and is not, as sometimes viewed, a mere device for avoiding the risk of an occasional underestimate of costs. Lack of sufficiently detailed and consistent reporting, and differences in the nature of the reviewed projects, preclude us from drawing useful generalizations on the causes of the observed construction costs and scheduling changes. Much more needs to be done to seek answers to the more interesting questions in any ex post performance evaluation: why are cost

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estimates off the mark; why are anticipated schedules not met, and most importantly, what are the changes in anticipated benefits? This study may serve, however, as a useful background for follow-up studies based on additional data collected in the project areas.

While this paper is not intended to make a systematic reappraisal of the anticipated benefits, a casual review of supervision reports shows that major revisions in anticipated cropping patterns, project coverage and yield projections have taken place in many cases. This is not surprising, considering the uncertainties in making projections of benefits. It would be desirable, however, to determine whether systematic errors are made in the initial projections and what their nature is. Only comprehensive field investigations could provide the evidence needed.

The conclusions to be drawn from material contained in reports available are necessarily limited. The information is usually collected to provide a working basis for the administration of various technical and coordinative aspects of project implementation. Information of this sort is understandably not oriented towards detailed economic analysis. Thus, the most significant conclusion of this study is that, to obtain the relevant information potentially available and make use of it in future project planning, it is necessary to change reporting procedures. Standardization of categories for reporting information by appraisal and project authorities is of primary importance. Needed new information will be available only if new methods of grouping costs and delineating the occurrence of these costs are adopted.

Choice of Projects and Methods of Analysis

By the end of 1967, the Bank had helped finance approximately 50 irrigation projects. The eight projects considered suitable for a re-evaluation study were selected by applying the following criteria: (1) Construction of major project works had to be completed; (2) Fairly complete appriasal and supervision reports had to be available in the project file; (3) In the case of multi-purpose projects, the costs attributable to irrigation had to be explicitly allocated in appraisal and supervision reports; and (4) Only irrigation projects as defined by the Bank were used, i.e., irrigation promotions financed as agricultural credit projects were excluded. One of these projects was in East Asia, four in South Asia, one in the Middle East and two in Latin America. [Note: Projects are not identified in this excerpt.]

The only systematic analysis in this study is the attempt to determine the combined effect of changes in costs and timing during construction on anticipated total project benefits. As changes in project

benefits could not be ascertained, benefit-related cost changes were also excluded from this analysis. The analysis began by calculating the rate of return based on cost and benefit data reported with the original appraisal. Subsequently, a revised rate of return was calculated, reflecting both those construction scheduling and project cost changes which were unrelated to changes justified on the basis of corresponding or higher benefits, and those benefit changes exclusively related to changes in construction schedules. Comparison of the original and revised rates of return can be understood to reflect the impact of the combined changes in project costs and construction schedules.

Effect of cost changes and construction delays on economic rate of return. In six of the eight cases we examined, project execution has been more costly than anticipated, and delays in construction have occurred in all cases. The combined effects of the differences between projected and realized costs and delays in construction are reflected in changes in the anticipated project rates of return (see Table 1). Generally the error from incorrectly anticipated project costs and timing of execution does not appear very high, particularly when compared with the potential error resulting from differences between projected and realized project benefits. Mere casual observation indicates that reassessment of the actual benefits might be expected to produce a rate of return on many projects ranging from one-half to twice that originally estimated.

Table 1 summarizes the percentage changes in project costs for the eight projects under review. The recorded cost changes do not necessarily reflect all differences between anticipated and actual costs, because data were not available for some cost items. In some cases these cost changes are not entirely changes in real costs, since adjustment for cost changes due to general inflation was not

Table 1: Effects of Unanticipated Cost Changes for Eight Irrigation Projects

Projects	% Change in Project Costs	Extension over Anticipated Time Required for Project Completion		Initial Rate of Return (%)	Revised Rate of Return (%)	"Error" Relative to Initial Rate of Return (%)
		No. of Years	% Increase			
A	12.7	1	20	13.2	11.2	-15.2
B	-14.3	1	25	16.7	17.4	4.2
C	46.3	2	33	18.6	17.3	- 6.5
D	50.3	2 1/2	83	49.6	37.2	-25.0
E[a/]	5.5	1	25	77.6	72.7	- 6.3
F	11.6	3	43	10.7	8.7	-18.7
G	-10.6	1 1/2	30	18.7	18.0	- 3.7
H	-30.6	2	50	14.4	17.6	22.2

a/ Revised rate of return based primarily on change in scope of project.

usually possible. Cost changes resulting from changes in the scope or nature of the project are in a category to themselves, since they cannot be meaningfully evaluated except with reference to changes in benefits. Of the reviewed projects, project E seems to be the only one in which cost changes are substantially related to changes in the project's scope. For this project, the difference between the revised and the initial rates of return primarily reflects the change in the scope of the project. Cost changes resulting from additional works necessary to maintain the designed scope of the project were not uncommon. For example, at the project A dam site, fractured rock was found to a much greater depth than anticipated on the basis of preliminary drilling, and hence excavation to a greater depth, followed by casting of solid cement, was required. In project D, the height of the embankment had to be increased when more reliable data indicated a greater frequency of floods than originally estimated.

In all cases there were unanticipated delays of a year or more in project execution (see Table 1). The reasons given for delays in the projects reviewed are listed in Table 2. Supervision report data are usually not sufficient to determine very precisely the impact of delays on costs. The reports do not indicate whether increased labor costs are due to a rise in wages or to additional labor; nor, if this information is given, whether the increase is related to an extension of the construction period. Similar situations exist for other cost

Table 2: Factors Responsible for Delays in Project Execution

FACTORS	PROJECT							
	A	B	C	D	E	F	G	H
Procurement Difficulties (equipment, parts, etc.)	X	X	X	X	X	X	X	X
Irregular Delivery of Raw Materials	X							
Designs Incomplete or Changed	X		X	X	X			
Organizational Difficulties	X			X	X	X		
Contracting Problems				X	X	X		X
Farmers Reluctant to Finance On-Farm Works						X		
Delayed Effectiveness of Loan				X			X	X
Local Funds Not Available							X	

items. A rough indication of the possible correlation between delays and costs might be deduced from the fact that project D, with the longest delay is also the project with the largest cost increase.

Changes in anticipated benefits. As stated above, a quantitative reappraisal of project benefits was not intended in this study, but it was hoped that supervision reports would reveal some useful information about the extent to which originally projected benefits may need revision. A review of the reports suggests that changes have occurred in all projects in at least two of the following factors: project coverage, cropping pattern, yields, relative prices and production costs. Reporting procedures are not adequate, however, to conclude that other changes have not occurred. Generally, supervision reports do not discuss sufficiently the nature of changes in anticipated benefits. The main reasons for lack of relevant information is that supervision missions are usually assigned the specific tasks of monitoring construction progress and helping to remove bottlenecks in project execution. For most projects, full development is expected after eight to 15 years and has not been reached in the projects under review.

The information available indicates clearly that the cropping patterns, crop yields, amount of land brought under cultivation, quantity and cost of inputs used by farmers, and commodity prices will frequently differ from original expectations. It is clear that any attempt to analyze both the implications of these changes for overall project benefits and the true nature and causes of the projection errors will come to nothing unless data are collected and reported systematically for an extended period of time. Practically speaking, any meaningful ex post analysis of benefits requires separating the impact of the project from the natural development of the area. Particularly in an agriculture which starts out with a very low level of technology, using production benefits observed before the project as a reasonably close proxy for what would have happened without the project is unrealistic and inappropriate. Hence, even comprehensive reports on land use, crop yields and other farm productivity data from the project area as the project unfolds may be practically useless for a correct evaluation of project benefits, unless accompanied by data which permits inferences on what would have happened without the project.

[Excerpted from an unpublished World Bank study, March 1969.]

WATER RESOURCES

WOMEN DRAW WATER FROM THE COMMUNITY
STANDPIPE IN FARIDABAD, INDIA
[PHOTO: UNITED NATIONS]

Drawers of Water: Domestic Water Use in East Africa

Gilbert F. White,
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[Water supply improvement in the developing world has not kept up with population growth, especially in urban areas. To achieve maximum benefit from the expenditures made to remedy this gap, water projects must be based on greater knowledge of how water is used in the community, and how water improvement affects economic growth and community health. Preliminary evidence suggests that slow development of ideal water systems should be set aside in favor of more rapid delivery of lesser quantities of potable water to every household.]

For at least a quarter of mankind, a clean and adequate supply of water is neither their lot nor an early prospect. Most industrialized cities take it for granted that abundant flow, free from harmful organisms, will be available to those who can afford to pay, and they assume that the price will be within reach of all. Yet the growth of population in rural areas and on the burgeoning margins of tropical cities probably now exceeds the rate at which improvements in water supply are made. Roughly two-thirds of the human family draw their water daily from sources outside the household and carry it in containers to their homes. In East Africa the proportion is nearer nine out of every ten. There, as in other parts of the developing world, the sources range in quality from

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continuously polluted pools to systems offering supplies as pure as the most sophisticated in Europe or America.

In modern times the "drawers of water" are widely subject to heavy costs and threats to their health. Under prevailing public policies their water supply deteriorates rather than improves as population increases. In considering how best to meet these increasingly critical domestic needs for water, two sets of problems arise. One relates to how much and what kind of improvement in supplies is desirable. What are the effects on family and community life of different qualities and quantities of water? Since each improvement involves cost, what are the offsetting gains from making it? What combination of water supply, treatment and delivery can best serve the individual and society?

The second set of problems relates to the practical organization and means to be used to obtain improved supplies. What kinds of improvements would the users accept and which would they prefer? In what circumstances would consumers use more or purer water? How would they be likely to help pay for and carry out the needed work? Against considerations of what is socially desirable must be set what is practically feasible.

The first group of questions examines the volume used and the social costs of different uses and sources, particularly their health costs. The second inquires how people choose what water they will use. Some aspects of each are the subject of this study of domestic water use in East Africa. With their great variety of environment and economic development, the landscapes of Kenya, Tanzania and Uganda illustrate issues which are found in somewhat similar form throughout the developing nations. Essentially these are issues of reconciling public investment and educational policy with the decisions of individual water users and with imperfect scientific understanding of the effects of water quality and quantity on human life.

Water and Community Well-Being

Proposals for construction of new or enlarged supplies of water commonly stress the projection of historical demand, the efficient design of needed works and the financial feasibility of the required investment. All of these are important. The methods are well understood and they need not be restated. Yet, if investment of scarce capital is to be weighed in a fashion appropriate to developing countries, still other evidence should be considered. The way people respond to present and improved supplies and the effect this has on community health and welfare should be examined for the whole range of theoretically possible improvements. Increased volume of use does not necessarily bring proportionate gains in

health. Nor does the construction of additional safe supplies necessarily result in increased use by those people who most need them.

Thus our analysis gives special attention to how much water people in fact use, to what accounts for their volume of use and choice of source, and to the only partly understood relationships between health costs and water quality and quantity. By dwelling on these points we seek to offset the imbalance of the customary demand projection and its accompanying plan to expand supplies. In doing so we may be guilty of placing undue weight on these considerations.

In the higher income communities of Europe and North America multiple-tap service is taken for granted. It is expected to be used by all, with resulting elimination of most health hazards linked to unclean or sparse water supplies. The situation is far more complex and much less understood for water use by the majority of the earth's population who draw water from a single source either inside or outside the home. In the earlier stages of economic development, the variety of sources is large and the possible combinations of water quality, quantity and use from both improved and unimproved sources is immense. Processes of individual and group decisions are more subtle. Their consequences for the lives and well-being of people are more difficult to trace.

Although the general conclusions brought together in the following pages are drawn primarily from observations in the highly diverse environment provided by East Africa, they have been compared as far as practicable with experience in other areas, principally in India, highland Bolivia, parts of West Africa and the United States, having markedly different cultural and physical environments. The details may differ, but there is reason to think from the data so far examined that the major generalizations will fit conditions in numerous other sectors of the tropical developing world.

Water use and health benefits. The construction of a conceptual model relating health benefits to water use and the development of quantitative analyses at once show up deficiencies in the data available. If the pollution of a source is halved, or the quantity of water per person is doubled, what improvement of health will result? We can be confident that increasing supply by half a liter for those consuming three liters a day will have some effect, and we can also be sure that allowing another 100 liters of bath water for the rich man who already wallows in 100 liters will change health but little. There is a sector—we would guess somewhere in the 20 to 80 liters per person range—where health benefits of increasing water begin to level out. It is essential to find more precisely where this point lies, since it greatly affects social costing of water, and this can best be determined by field studies of the effects of varying levels of

water improvement. It is remarkable that such studies have not yet been carried out.

Aggregate social costs. Along with measures of public health, account must be taken of the community cost of providing supplies of improved quality and reliability. Where a completely adequate supply is provided, the deleterious effects on health would approach zero and the total social cost would consist of improvement and conveyance costs. Where the improved supply is only partly adequate in quality or quantity, the residual health effects would need to be considered along with improvement costs. Per capita costs of piped systems run from $8 to $300 for construction. For rural systems the costs run from $1 to $30, $5 being a widely accepted estimate of the minimum cost of providing supplies for relatively nucleated rural communities. Obviously, the per capita costs in rural communities, unlike those in urban areas where there is relatively uniform density and distribution of settlement, depend on the overall density and spatial pattern of distribution of households. The East African pattern of dispersed settlements makes for maximum costs in rural areas, and represents an extreme of environmental conditions. A conventional diagram which shows health costs falling as water costs rise may be misleading.

There is little reason to think that once a point of minimum social cost has been reached national economic development gains substantially from expansion of the available quantity of good quality water for domestic purposes, as contrasted with agricultural uses. In particular, the relation of low unit price to development is questionable. The amenities of living for workers and managers are enhanced by increasing the supply, but their health is not notably improved. Their demand for water for the amenities appears to be more a function of income level than of price, although higher income groups may respond to price of water for lawn watering.

To the cost of new water supplies above a use of about 30 liters per capita must be added the costs of household plumbing facilities (often requiring use of foreign exchange for purchase), and of sewers and sewage disposal systems for waterborne waste. The latter run from one-quarter to more than three-quarters the percentage costs for water supply, with cost of required waste treatment offsetting economies of scale as water use increases. The larger the amount of water consumed in an urban system, the greater the public cost per capita of disposing of the waste. In the United States it is estimated that the annual per capita cost of collecting and treating sewage runs about one-half to two-thirds the costs of supplying water. To offset these costs there are the gains in health which come from improved sanitary disposal, and here the difficulty of assigning quantitative value is great. In general it appears that, as with water

supply, once a minimum service is provided the unit gain to health from units of improvement probably decreases sharply as refinements of treatment and disposal are adopted.

Government decisions. In dealing with supplies pumped directly into households, it is common for public bodies in towns such as Dar es Salaam or Tororo to apply two general policies. First, it is assumed that the population which can afford to pay for house connections should be enabled to use as much water as it wishes at a cost sufficient to return the public outlay for construction, operation and maintenance. Second, it is required that the cash revenues from either meter or flat rates pay off the total investment in construction and maintenance. This policy is not in force everywhere, and to the extent that less than the direct outlay is recovered, the difference represents a public subsidy. To the extent that revenues exceed costs, the water enterprise becomes a form of differential taxation.

Designers of new pipe systems in East African urban areas seek supplies that will be reliable in quantity, relatively pure in quality and minimum in cost. The public scheme typically attempts to distribute potable water through whatever fixtures the consumer chooses, and the pricing schedules often favor larger use. Under prevailing price and repayment schedules, the higher income users pay relatively less per unit than do the low income users. For those who lack piped connections, public standpipes are provided at convenient points: some municipal governments, such as Kampala and Nairobi, charge enough to repay estimated operating costs. Construction costs for standpipe connections are less because smaller pipes and storage are required than for multiple taps. Tanzania makes no charge and counts the costs as warranted public expenditures, but not at the loss of net returns from the system as a whole, thus spreading the cost to consumers having piped connections.

The public policies for providing supplies in rural areas are more diverse. In Argentina, a country with a per capita annual income of more than $700, a financing program concentrates on bringing potable water to residents of rural communities between 100 and 3,000 in population. In 1968 only 7 percent of the rural population and 72 percent of the urban population had potable water. In East Africa there has been a recognized obligation to aid in furnishing water where it is especially difficult to obtain. Until recently, schemes for further improvement were distributed chiefly in new settlement projects or where opportunities for gravity supply make it especially easy or where there has been special stimulation to local initiative in constructing or demanding better facilities. Although the national governments include rural water supply improvement as a goal, it is only since 1968 that they have launched pro-

grams to bring good quality water to specified proportions of the rural population.

National water improvement decisions inevitably are linked with other policy considerations. New domestic supplies in an arid area may stimulate increased livestock production and range deterioration. Improvements in rural districts may be viewed as stemming migration to the cities, whereas urban improvements may attract farm migrants. More intensive agricultural settlement may be contingent upon developing adequate supplies. Water supply and waste disposal are traditional alternatives to health service investments.

Individual decisions. For individual carriers of water the decision process is far more complex than in households having piped supplies where the individual exercises choice primarily about the volume of water withdrawn. Typically, the user seeks what she perceives as a healthful and technically accessible supply and is somewhat less influenced by cost or by convenience. Her perception of the available sources of water seems to emphasize their purity by her standards. Considerations of direct cost enter heavily into her discrimination among those sources which are perceived as healthful. She may then be disposed to select a source that avoids the irritations of conflicting users or of potentially abrasive encounters.

It would be a mistake to regard water users in rural areas as heavily bound by traditional views of water quality and source. The drawer of water usually appraises several alternatives. She may fail to go to a new borehole which has been established by the government, or she may walk a considerable distance to draw on a supply as contaminated as one nearer her home, but these choices, in many instances, may be traced to views of cleanliness, practicability and interpersonal consequences which represent discerning choice on her part rather than blind conformity to the customary procedures of her cultural group. To the extent that this is true, a change in choice of source is not a matter of breaking habit or the hard cake of custom but involves cultivating new perceptions of health, convenience and cost.

Implications for resources management theory. The field observations in East Africa suggest that a descriptive model of resource decisions in which a household's elementary transaction with nature is defined in terms of individual perception of choice, resource, technology, economic efficiency and linkages goes a long way toward explaining why particular water sources are used and why certain responses may be expected to public intervention in providing new sources of supply. The water user's perception of the choices available to her seems to run consistently less than the theoretical num-

ber of choices which the scientific observer might describe or that she could identify if pressed hard to do so. This is to be expected as a common method of coping with complexity in dealing with an intricate environment, and it is interesting that users rarely are able to specify a range of choice of more than four or five.

The perception of available technology for improving water supplies is not closely associated with education, nor could it be readily described in terms of diffusion of innovations. We encountered no adequate way of explaining why tin roofs are not used more efficiently to catch rainfall: this is an example of an aspect of the decision process which needs vigorous explanation. Differentials in observation and information are likely explanations but are not clear. It also is likely that the different roles of man and woman in commanding household expenditures may explain the reluctance to invest in such improvements.

Water users characteristically are sensitive to linkages of water use with other members of the community. Contrary to the view held in some quarters, it was found that users in East Africa prefer private to communal sources when they have the opportunity. They avoid situations where there is risk of irritating confrontation. They may enjoy sharing communal sources when this is required, but when presented with a genuinely viable choice between a communal source and one affording privacy, they seem to choose the latter except in certain special circumstances. These include water sources and containers which make it necessary for a woman to have the aid of another woman in hoisting the water to her head before carrying it home, as in parts of Lango. It was found that where the assignment of rights to land conveys with it control of access to water sources, even though the water sources are regarded under the customary law as being common property, individuals tend to avoid using sources that would imply a need for trespass or would interfere with what may be newly conveyed rights of ownership in the sources. Thus the trend toward assignment of property rights in areas where formerly there had been no cadastral lines and no deeded rights to land reduces the range of choice in drawing upon water.

If water improvement were being planned in a rural area and the planner wanted to predict the response of local water users, the procedure most likely to yield accurate results would be to arrange for the users themselves to participate in designing, constructing and operating the scheme. There is no more direct way of finding out their preferences and their willingness to contribute to building and using the improvement. Next best is to study their current habits of water use and the factors which seem to account for choice in present circumstances.

Implications for Public Policy

Rural aims and methods. An idealized case of rural water supply might be one in which each household has ready and exclusive access to an adjacent spring or rainwater source yielding year-round supplies not subject to serious human pollution. Disease effects would be minimal, and energy costs also would be nominal. In these circumstances, the aggregate cost would be low and might even be below that for a household having low-cost piped supplies.

The steps toward this ideal to be taken first will depend on the area. No one technique of improvement would be best for all environments. In the hilly highlands of Kenya, gravity-fed piped systems concentrating on bringing water closer to the home should have priority. In schistosome-infected areas, storage facilities of two drums or tanks per household might come first; in guinea worm zones, it should be source protection. In places with high rainfall most of the year, emphasis should be on storage from the roof: this may call for linking guttering and storage to corrugated iron roofs as a status symbol. Where the sources are numerous, caution is required against improving only a few sources, since the resulting concentration of users—assuming that they perceive the improvement as beneficial—may outweigh the gains from reducing access of pollutants. This last point needs further field investigation.

Where sources are few, enhancement of water quality and its accessibility comes first and provision of boreholes is important. However, it is clear from the number of unused yet fairly functional boreholes to be found that boreholes are not a general panacea, and that local assessment of the best measures is always required. Acceptance of improvements may be impeded by the procedures and conflicts of government agencies as well as by the perceptions of local users.

National policy should therefore be in terms of concrete goals, not methods. We would suggest that the rural aspect of a national policy which sought to minimize the social cost of water supply might have these features: 1) For all rural communities, efforts would be made to provide all inhabitants with improved supplies offering up to 20 liters per capita with moderate contamination hazard at no reimbursable cost other than initial and continuing contributions of labor for construction and maintenance and for transport from the source. 2) So far as the rural population shows itself ready, over a reasonable period of repayment, to bear the whole cost of maintenance and some proportion of construction cost for simple piped schemes furnishing up to 40 liters per day with low hazard of contamination, these would be provided. 3) Individual homeowners would be systematically encouraged to make independent improve-

ments. These include individual cisterns, shallow wells, spring protection, water treatment devices and methods of handling water. Social guides would include research on new methods, information on proved techniques and technical assistance in design and construction.

Such a policy would depart from the current tendency to focus national efforts on projects directly administered by national agencies. More emphasis would be placed on stimulating individuals and community groups to make their own improvements. The expensive and technically difficult projects would be undertaken only if they promised very large returns in crop and livestock production, and thus would not cause drastic increases in total expenditure levels. The shift would be from centrally planned and costly works with high standards of purity to decentralized, inexpensive works with somewhat lower standards. In nations where only three to 10 percent of the total population lives in large urban areas, but where such areas are growing rapidly and disproportionately by comparison with the nation as a whole, stress in planning and investment would be laid on providing improved supplies to the rural population and safe water for the expanding group of low income workers in the cities. The choice may be between treating these people differently from higher income workers and neglecting them entirely.

Urban aims and methods. In urban areas where piped supplies are practicable, the low income consumers are bearing a disproportionately large share of the social cost, whereas the upper income consumers carry a disproportionately low share. It is not uncommon for more than 40 percent of the population of an African city to be served by standpipes or unimproved sources and for this group to use about 15-20 percent of the total domestic withdrawal, and less than 10 percent of the total withdrawal. As an alternative to current policies, the public agencies might consider a policy aimed at achieving the lowest aggregate social cost from providing water. It is important to recall that no solid evidence has been advanced showing that urban economic growth is dependent upon improvement of domestic water supply beyond the minimum standards suggested above. To be sure, amenities are involved, but basic changes in employment pattern and productivity apparently are not at stake.

The density of population in relation to the number of independent sources in urban areas is very high, and therefore human pollution is a much more serious problem than in the countryside. Whereas in rural areas quantity of moderately clean water is the chief aim, in urban areas it is at least as important to reduce the use of dangerous supplies as to provide adequate volume for use. In the absence of sewer systems in many poor areas this is more urgent,

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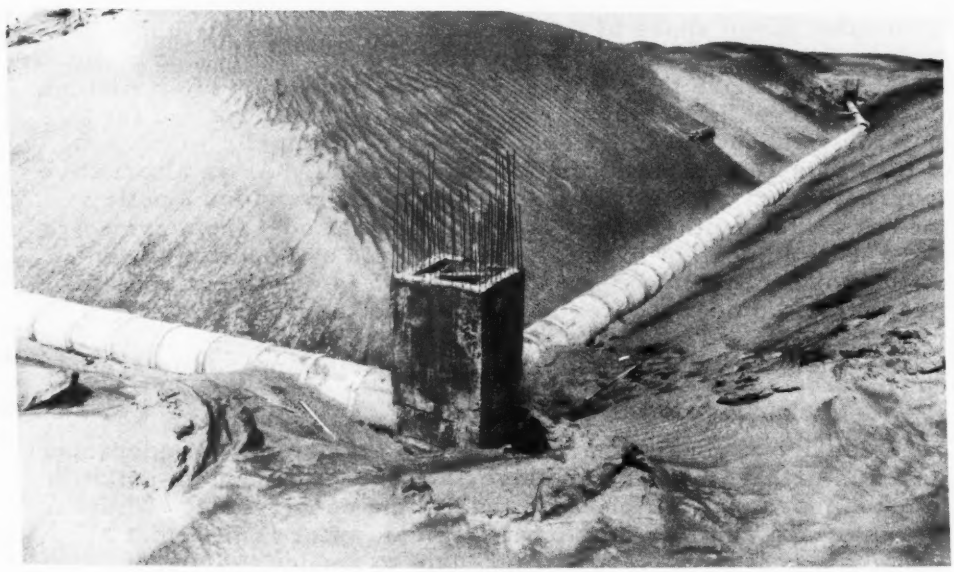
and also more difficult, since much polluted surface water results. The suggested aims for urban supply are therefore as follows. 1) A minimal pipe installation of one controlled tap per household yielding up to 40-80 liters per capita per day would be provided at a charge to cover the direct cost for supply and maintenance. Where single-tap installation is impractical, standpipe service would be provided. 2) The remainder of the urban consumers would have more than one tap and would be expected to pay the full cost of their required system capacity, including sewer installation charges, on the basis of allocating joint costs as described above, and on a pricing schedule which would charge proportionately more for uses larger than those required for health. 3) Efforts would be made to devise simple ways of using small quantities of water to improve household sanitation, and to bring water into the household at low cost without promoting large garden use or peak demands, as by using flow regulators rather than flow meters.

A common method of planning for urban water supply improvement is to project future demand, canvass the available means of supplying the demand, and then choose the design assuring the desired volume at safe quality and lowest cost. The decisive criterion is minimum investment, given the projected demand. This may be reasonable in areas where income is relatively high, where the tradition has been to encourage per capita use as a means of improving the financing of multiple-tap installations, and where there



Water pipes from Lake Guiers deliver clean water to Dakar, Senegal. [Photo: World Health Organization]

is no prospect of exhausting supplies or degrading downstream supplies. However, if the deciding question is posed as "What is the cheapest way of meeting minimum health standards?" in place of "What is the cheapest way of meeting projected demand?" another design emerges. In a city with 30-50 percent of its total population in low income housing or squatter quarters, the crucial aspect of design from a public health standpoint is seeing to it that the 30-50 percent are provided with pure supplies in quantities of 20-80 liters per capita daily. That minimum can generally be reached at a cost of $10-30 per capita. An integrated system caring for the full demand may run $50-200 per capita as a minimum.

Policy choices. As we assess the use and improvement programs in the varied environments of East Africa, we find opportunities for fruitful action especially promising in three directions. First, individuals or groups of rural water users stand to gain greatly in health from very modest improvements. Second, where settlement density and pattern permit, the development of rural distribution lines can help materially in reducing both health and energy costs. Third, in urban areas there is particular promise in simple installation of single-tap service. The first two will depend upon self-help initiative with guidance. The third will demand innovation in methods of organizing urban deliveries of water. All three will need imaginative research to perfect new equipment, techniques and methods of management.

Some administrators look longingly to an earlier period when it was assumed that the march of change in developing countries would be slow but sure in the direction of replicating Western European material culture. Under this view it was proper to lay out a city water system with the idea that ultimately all consumers would live in multiple-tap dwellings and that makeshift service would suffice until people could pay for the best. When the realities of present urban population and economic growth rates are considered, it is more reasonable to assume that within the physical life of new water systems only a small proportion of the inhabitants will be able to enjoy such facilities. The key problem then becomes one of finding the least costly means of meeting whatever are regarded as minimum health standards.

[Excerpted from Drawers of Water: Domestic Water Use in East Africa. Chicago and London: The University of Chicago Press, 1972, pp. 1-2, 251-252, 258-268, 273-280. Copyright © 1972 by the University of Chicago Press.]

The Contribution of Rural Water Investment to Development

I. D. Carruthers

[There is little evidence to support the widely accepted proposition that the provision of adequate water supplies to rural areas is of high priority on both economic and social grounds. The direct benefits of rural water improvements are probably fewer than expected.]

There is much conviction but few facts on the benefits that derive from improved water supplies. In view of the importance of rural water development in public and private investment and the dearth of knowledge about the benefits, more resources should be devoted to research on the problem than has heretofore been the case. As a first step in identifying the advantages that accrue from rural water improvement, the potential health and economic benefits should be considered separately. It would seem reasonable to postulate that use of an infected water source will lead to poor health of persons using the supply. In particular a high incidence of communicable intestinal disease, typhoid, intestinal parasites, infantile diarrhea and trachoma might be anticipated. Also, it might be hypothecated that if domestic water supplies are limited and unsanitary, then household cleanliness will suffer and give rise to additional risk of infection.

The link between health and economic benefits is that with improved water supplies, savings may be possible on health expenditure. In particular, savings on staff and drugs may result, providing that preventable diseases are in fact avoided. In addition, increased fitness of agricultural workers should facili-

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tate higher labor inputs at critical periods in the agricultural calendar and a higher quality of work. It is generally agreed that lack of labor at key periods may limit the total area cropped, the area planted with high value crops, and the planting of crops at an optimum time, with subsequent lower potential farm income. However, the extent to which sickness at critical time periods (such as planting, weeding and harvesting) actually reduces the agricultural labor available and the efficiency with which tasks are carried out has not been determined in East Africa.

Given the high incidence of diseases in rural areas it would be plausible to postulate that preventable sickness must be an important factor constraining agricultural output and economic gains. Attractive as such an hypothesis is, however, it is not possible to quantify potential gains empirically. There is a dearth of data on the extent of preventable diseases in rural areas. One notable exception is the Zaina area of the Nyeri District, Kenya for which there is a well-documented study that is both longitudinal (before and after rural water investment) and horizontal (with and without piped water, investigated at a single point in time). The Zaina scheme has supplied piped chlorinated water to nearly 6,000 people since 1961. Before the water supply was improved, Zaina was subjected to a health and general living condition survey together with a nearby area, Thegenge, which was considered to be similar in all respects except for the planned piped water. Four years after piped water became available in Zaina, both areas were resurveyed. It was found that the general level of health among children in Zaina had improved dramatically

TABLE 1: MORBIDITY IN ZAINA AND THEGENGE
(days illness per person March to September)

	1961		1965		1965 as % of 1961	
Age	Zaina	Thegenge	Zaina	Thegenge	Zaina	Thegenge
1 year	16.1	9.1	4.3	8.1	27	89
1-2 years	13.0	7.2	7.5	10.1	58	141
3-6 years	11.1	10.0	5.1	9.5	46	95
7-12 years	5.4	2.5	3.1	4.0	58	159
Children All Ages	9.4	6.2	4.7	7.3	50	118
Adults	3.28	2.70	3.71	3.15	113	117

SOURCE: K. W. H. Fenwick, "A progress report on the Zaina environmental sanitation scheme—a pilot project in rural Africa," MOH, Nyeri, Kenya, 1965 (mimeo).

but among adults had declined slightly. In Thegenge the general health of both children and adults had declined. Details are shown in Table 1.

One of the most interesting facts derived from this table is that an adult was sick less than half a day per month and that piped water apparently made no improvement. On the basis of this data, the hypothesis that large potential gains in labor output could be obtained from a general improvement in health cannot be substantiated. Even if piped water prevented all sickness, the gain to the labor force would be less than half a man day per month. The improvement in the general health of children in Zaina between 1961 and 1965, however, is striking and contrasts with the deterioration in Thegenge. The author of the Zaina study attributes this difference to the piped water and predicts that the improvement in Zaina will increase and the difference between the two areas will widen as time passes.

It is not simply piped water that has changed life in Zaina. A more significant effect can be attributed to the presence of doctors, health assistants and nurses, and to the general hygiene and environmental improvements made over time. There was a resultant improvement in health indicators including improved roofing, larger houses, better ventilated homes and lower presence of disease-carriers such as fleas, bedbugs, rats, mice and cockroaches. Health personnel were also present in Thegenge, but their efforts to improve the human environment bore less fruit.

One problem in predicting great health and economic benefits from investment in piped water is that the elimination of water-borne infectious diseases may not guarantee improved health. Other diseases such as respiratory diseases may continue to cause high morbidity. Water associated disease might even continue because the population is still exposed to infection from purchased vegetables, infected friends, mosquitoes and tsetse flies. This is an important fact for it means that to be successful a water project must supply an extremely large area with protected water, and all other necessary aspects of health maintenance must be satisfied.

For some of the water associated diseases it is possible to consider alternative methods of control. Typhoid could be prevented by TAB vaccination and yellow fever by appropriate vaccination. Malaria can be prevented by spraying. Perhaps the simplest method of improving hygiene is to boil all water used for drinking, cooking and washing utensils. However, mass indoctrination into the need for these measures has proven difficult in some countries.

While the indirect economic benefits resulting from improved water supply and improved health are difficult to predict, it is pos-

sible that the direct benefits to be anticipated from water improvements might be easier to forecast. For example, an ample supply of clean water is essential for the adoption of high quality livestock enterprises in the densely settled high altitude areas of Kenya. Ample water is necessary because otherwise the cattle would have to walk down the slopes through tick-infested vegetation. Tick-borne disease is often fatal to high quality stock. Thus to reduce the risk of tick-induced disease is to reduce the risk of economic loss.

At Zaina between 1961 and 1965 the number of grade cattle increased from 3,640 to 6,025, an increase of 66 percent. (In the control area the increase was from 3,115 to 4,250 or 36 percent.) One consequence of the increase in cattle has been an increase in milk sales to the dairy cooperative. The number of pigs in Zaina has also increased. Data for livestock development are presented in the following table.

TABLE 2: LIVESTOCK DEVELOPMENT IN ZAINA

		1961	1962	1963	1964	1965
Grade Cattle	Zaina	3,640	-	-	-	6,025
	Control	3,115	-	-	-	4,250
Milk sales to cooperative (gallons)	Zaina	-	54,800	109,700	133,500	110,600
	Control	-	23,400	40,400	56,200	44,600
Pig sales	Zaina	88	235	347	564	1,258
	Control	22	53	60	13	173

SOURCE: Fenwick, "A progress report on the Zaina environmental sanitation scheme."

An economic survey was made of a similar scheme at Kabare, Kenya, which also had piped water installed in 1961. There are few grade cattle in this area and virtually no pigs. The reasons for this failure to reap economic advantage from the new water supply are not clear but they probably include lack of credit for purchase of stock, lack of untilled land for raising food for fodder, lack of marketing and processing facilities, and less local initiative than in Zaina. Thus the benefits of piped water in the form of returns to intensive livestock husbandry are only potential benefits. A number of complementary inputs are required before these benefits are realized.

Perhaps the most important benefits from rural water improvements are achieved by relieving the women and children from their customary task of carrying water from the source to the homestead. This activity is in many cases extremely arduous with heavy loads being carried long distances or up steep slopes. The amount of time involved in carrying water varies widely, but it may be assumed that

provision of a convenient water supply would save considerable time and make available significant amounts of labor for agricultural and domestic activities. Benefits from labor release, however, can only be claimed when there is a profitable use for this labor.

If demand for water investments is a derived demand, it would seem reasonable to anticipate that demand for and returns to water will be greatest in areas that are highly developed or where the potential for development is greatest, in other words, in areas where the opportunity cost for labor is the highest. To some extent this relationship is reflected in the concentration of self-help schemes in Central Province, Kenya, shown in Table 3. Central Province which may be considered to be most highly developed gives priority to water projects. Water accounts for 10 percent of all self-help schemes and the total amount spent exceeds that spent by all other six provinces put together. It is also noteworthy that considerable emphasis is given to piped schemes, in many cases with individual connections.

TABLE 3: SELF-HELP PROJECTS FOR COMMUNAL WATER SUPPLY - 1968

Province	Cost of Type of Installation (K£'000)					Percent of total self-help
	Piped water supplies	Wells	Spring protection	Dams & water catchments	Total water costs	
Coast	6.6	1.0	0.2	0.9	8.8	5.3
Central	68.0	0.6	0.3	1.1	69.9	10.3
Nyanza	4.2	1.0	0.4	0.4	6.0	0.9
Rift Valley	6.3	1.4	4.5	3.1	15.3	2.6
Western	0.9	0.2	0.4	0.2	1.8	1.0
Eastern	5.0	5.2	0.3	6.2	16.6	6.1
North-Eastern	2.9	0.7	0.6	1.4	5.7	3.9
TOTAL	93.9	10.2	6.7	13.3	124.1	4.6

SOURCE: Ministry of Cooperatives and Social Services.

The logic of the preceeding arguments suggests that if maximum economic gains are sought, investments should be concentrated in areas that have a high degree of development and that though individual connections may be thought desirable, this may not be sufficient to ensure that benefits will be realized.

[Excerpted from "Assessing the Contribution of Rural Water Investment to Development," East African Journal of Rural Development. Kampala, Uganda: The East African Agricultural Economics Society and Makerere University, Vol. 3, No. 2, 1970, pp. 96, 102-109.]

Planning for Water Reuse

Daniel A. Okun

[Growing pressures on urban water supplies require imaginative water resource planning and management. Development of dual water supply systems that permit safe water reuse is one method suggested for coping with these new demands.]

Rapidly growing population and increasing rates of urbanization and industrialization throughout the world are exerting greater and greater pressures on limited water resources. Although nature renews the volume of fresh water available, we have been profligate in its use so that in many areas of the world, particularly in urban centers, communities have had to turn to polluted sources to meet their needs. In the United States, for example, about one-third of the total population uses water that in part is made up of wastewaters that only hours earlier had been discharged from municipal or industrial sewers. The use of polluted waters for public supplies poses many threats:

1) A breakdown in water treatment facilities may serve to carry contaminated water to users in great number. If raw waters are polluted, treatment facilities must be adequate in capacity, be properly designed, and must be properly operated, with highly qualified chemists and bacteriologists in close supervision, to assure that breakdowns in the treatment barrier do not occur.

2) Even where conventional treatment is provided, the fate of viruses, particularly those of infectious

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hepatitis, is uncertain. Only a few virus particles need be ingested for infection to result. Most who are infected may not become visibly ill, but subclinical infections cannot be considered innocuous. Their effects may be delayed, or may be camoulflaged amongst other illnesses, or may, by increasing the incidence of the disease in the population, promote the spread of infectious disease through other routes.

3) Hundreds of new chemical compounds are being introduced into our environment daily. The likelihood of ingesting such chemicals increases manyfold when contaminated waters are used as sources for municipal supply, as conventional water treatment is ineffective in removing these chemicals. Some of these chemicals, either alone or in concert with others, have been demonstrated to cause cancer, genetic damage, or birth malformations. Because the effects of such chemicals ingested in low concentrations over long periods are insidious, and are likely to be similar to those manifested by aging, their significance is hard to establish.

However, despite the fact that reuse of water is beset with many hazards, the need for reuse of water is upon us. How, then, may we plan for economical water reuse without submitting ourselves to the threats from bacteria, viruses and chemicals?

A Hierarchy of Water Quality

A theme for planned water reuse was stated by the United Nations Economic and Social Council in 1958: "No higher quality water, unless there is a surplus of it, should be used for a purpose that can tolerate a lower grade." In virtually all urban areas where sources of naturally pure waters are being exhausted, these limited supplies are being squandered on uses that can be met with waters of much lower quality, such as waters from polluted rivers, or waters reclaimed from wastewaters directly. In Bangkok high-quality ground waters and in Singapore waters from the reservoir system are being wasted on lawns, in industry, on toilet flushing and on many other uses that do not require the high quality that is necessary for a drinking water supply.

Using reclaimed wastewaters for non-potable purposes instead of high-quality water in a planned water resource program can provide the following benefits: 1) wastewater reuse for non-potable purposes relieves the pressure on limited high-quality water sources, so that these can serve larger populations; 2) the cost of providing reclaimed wastewater for non-potable purposes would be far less, in many instances, than the cost of developing additional high-quality fresh water sources; 3) wastewater reuse reduces the burden of pollution on the receiving body of water, thus reducing water pollution control

costs and environmental damage, and 4) the risk to the population of ingesting the contaminants present in polluted waters is reduced.

One additional benefit from such reuse is the elimination of the necessity for phosphate removal where wastewaters are used for irrigation. At current prices in the United States for ammonium nitrate, triple superphosphate and potassium chloride, the value of the nutrients in reclaimed wastewater amounts to more than 5 cents per 1,000 gallons (1.4 cents per cubic meter), a not insubstantial increment to the value of the water itself.

A development in the United States that indicates the value of this approach is that in Colorado Springs, Colorado, where about one-third of the biologically treated wastewater is passed through rapid sand filters, disinfected and then stored and distributed through an extensive second distribution system for sale as irrigation water to college campuses, cemeteries, golf courses and other large users. Part of this reclaimed wastewater is coagulated and settled with lime for phosphate removal and then passed through rapid sand filters and carbon beds for removal of organic chemicals and sold as industrial water. Supply of this reclaimed wastewater is limited to customers using more than 10,000 gallons per day (about 40 cubic meters per day). The reclaimed wastewater sells for two-thirds the price of the high-quality potable water that is served in the city. By 1980, 90 percent of the wastewater is expected to be reclaimed, thus putting off, perhaps permanently, major investment that would otherwise be required for additional water supply. Another excellent example is the water reclamation plant for the Jurong Industrial Estate in Singapore. Effluent from the Ulu Pandan Wastewater Treatment Plant is treated at a filtration plant and disinfected prior to being pumped to an industrial water supply system for use through the Jurong Town Council area.

Reuse of Wastewaters for Potable Purposes

If using polluted sources is hazardous, direct reuse of wastewaters for drinking is even more dangerous. The benefits and protection afforded by time in transit between the point of discharge of the wastewaters and the point of recovery from the stream for water supply, the dilution afforded by fresh water in the stream, and the disinfection by sunlight, sedimentation and natural bio-chemical degradation that take place in natural water courses are not available where direct reuse of wastewaters is practiced.

Direct reuse of wastewaters for potable water supplies poses other problems: 1) Water and wastewater treatment plants that are now available or that are likely to be economical in the foreseeable

future do not assure that removal or significant reduction of chemical contaminants that are likely to be present in wastewaters from urban centers; 2) The operation of these facilities is almost always below the design intention, even in industrialized countries. Often the quality of the operators, the supervision by regulatory agencies and the lack of investment in maintenance preclude efficient performance of treatment plants. In developing countries, moreover, the capacity of most plants is often exceeded before new facilities are constructed, so that efficiency of operation is threatened; 3) The technology for analysis and routine monitoring of potable waters is just not available to assure their safety when they are drawn from contaminated sources; 4) "Fail-safe" technology is not yet available; and 5) The public is understandably reluctant to ingest its own wastes.

The only planned direct reuse of wastewaters for public water supplies intended for drinking is at Windhoek, South-West Africa. During favorable periods, effluent is recycled after complex advanced wastewater treatment in a one-million-gallon-per-day plant for reuse as one-third of the potable supply for the city. During other periods, when the chlorine demand cannot always be met, the wastewaters are not recycled. In order to make this experimental demonstration system operate, a considerable investment in highly qualified supervisory personnel is required. The cost of extending this to other communities would be prohibitive, even if the personnel were available. Furthermore, the wastewaters in Windhoek carry no significant industrial waters, so that the threat of chemical contamination is less than it would be in industrialized communities.

Dual Water Supplies

How then can we meet the increasing demand for water for municipalities if reuse of wastewaters, either planned or unplanned, is undesirable where the water is to be used for drinking? One approach that deserves study is the dual supply system. A relatively small portion of the total public water supply is required for drinking, cooking and other uses that demand high purity. In industrialized cities, this portion is only about 10 percent, the remainder being used for industrial purposes, as well as for toilet and street flushing, lawn and park watering, laundering, fire fighting, public fountains and the like. Dual systems are not new. Large industries have been utilizing many different water supply streams for as many purposes within a single plant: raw water for cooling, a higher quality for process, a demineralized water for boiler feed, and a bacteriologically safe water for drinking. The efficacy of a dual system was well demonstrated in Hong Kong during the severe drought of the summer of 1963. Water was so short that the water service area was divided into sectors with each sector receiving water service four hours every fourth

day. This meant that many water uses, such as toilet flushing, were sharply curtailed. Only in the high-rise government housing on Hong Kong Island, where a dual system was in use with sea water for toilet flushing, were the sanitary needs being met throughout the drought.

Two main objections, cross connections and cost, are cited when dual systems are proposed. Conventional dual water supply systems, where one system delivers potable water and the other generally furnishes untreated water for emergency use only, has led to very serious water-borne disease outbreaks throughout the world. However, in the dual water supply system here proposed, the non-potable supply would be adequately disinfected, and could be of a quality that many communities are now providing for their potable systems. Occasional inadvertent ingestion should create no problem even if not discovered for weeks and months. The health hazard that results from continuous ingestion of potentially toxic substances over a period of years should not be present. However, proper plumbing codes and supervision of construction would help avoid this danger.

The cost of dual systems does warrant study. If an existing system is to be replaced in its entirety by a dual system, the cost might well be unreasonable. However, a dual water supply for new communities, or for new sections or renewal areas of existing urban centers need not be costly. Studies of the cost of such distribution systems indicate that they would be only about 20 percent higher than conventional systems. Where the new construction comprises high-rise multi-family dwellings with high density, the cost increment would be considerably less. It is easy to visualize the use of reclaimed wastewaters for toilet flushing in the mammoth housing developments that increasingly dominate the sky lines of modern cities. Offsetting this increased cost are the savings that result from eliminating the need for developing new pure water resources and, above all, the assurance of high-quality drinking water for public consumption. If only 10 percent of a high-quality public supply is now used for potable purposes, with a dual system this source could serve a population tenfold greater. All other water uses would be served from reclaimed wastewaters or from polluted streams or other waters of lesser quality.

The technology for such dual systems now exists. Because the potable water system would not be used for fire protection, it would not need to withstand the high pressures that are otherwise required. Plastic pipes would be entirely appropriate. Water quality surveillance would be far simpler where water planned for potable purposes is drawn from unpolluted sources.

Regionalization and Integration

Wastewater is a resource, and out of necessity, economy and safety, reuse must be planned. This requires close cooperation between water resource and water pollution control authorities. Slowly, this integration of interests is being institutionalized. Again, this is not new. Joint management of water and wastewater enterprises has been going on in the Ruhr area of Germany for 65 years. Unfortunately, there has been reluctance to initiate such joint enterprise elsewhere.

Water supply and water pollution control have been characterized since their initiation as municipal responsibilities. This has begun to change because the economies of scale of construction and operation virtually demand regional solutions. Larger facilities make possible the employment of qualified managers, engineers and laboratory personnel who can assure efficient water supply and wastewater disposal service at lowest cost without objectionable impact on the environment or threat to the public health. A regional approach and integration of water and wastewater management is further justified by the recognition that the wastewater of one community is often the water resource of another. Common enterprise in the development of water sources and in the reuse of wastewaters would serve both communities better than if the water supply and pollution control operations were independent of one another.

Regionalization offers one other major benefit. In place of the strictly municipal approach to water supply and wastewater disposal, regionalization offers an opportunity for serving outlying areas where this would otherwise not be economical. Often small communities in the vicinity of large metropolitan areas are without the resources to develop their own facilities. In the metropolitan areas in developing countries, such as Bangkok and Djakarta, often only the central city is served adequately, with the outlying areas being served by water carriers at a high cost with poor service and the continual threat of contamination. A regional program would stimulate the development of those services that are necessary to maintain health and to spur proper housing and the prospects for economic development.

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MULTINATIONAL BANKS

THE MAIN BUILDING HOUSING THE WORLD BANK GROUP
IN WASHINGTON, D.C.
[PHOTO: EDWIN G. HUFFMAN FOR WORLD BANK GROUP]

The World Bank Since Bretton Woods

Edward S. Mason and
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[In the 25 years since its birth the World Bank has contributed significantly to the reconstruction of postwar Europe and the economic development of non-industrial nations. The record of Bank accomplishments and the development of Bank policies are the subject of this historical analysis prepared for and published by the Brookings Institution; the authors were given full access to Bank personnel and documents. In addition, the outlook for the Bank during the years to come is examined.]

On June 25, 1971 the International Bank for Reconstruction and Development—better known as the World Bank—completed its first quarter of a century as a multilateral source of financial and technical assistance. It had by then acquired two affiliates, the International Finance Corporation (IFC) and the International Development Association (IDA). The conglomerate, known as the World Bank Group, also had as an autonomous member an International Centre for Settlement of Investment Disputes. By mid-1971 the Bank Group had acquired 116 member governments and had issued loans and credits of nearly $20 billion through the World Bank and IDA. The IFC had made net commitments of more than $500 million.

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Overall Impact of the Bank Group Activities

Some of the Bank's impact on methods of promoting development results from the fact that it was itself a pilot project—the first international institution of its kind to be created. Precedents for its actions were few. If the Bank was a cautious explorer, it had plausible reasons for caution. Girding itself for the long pull has proved consistent with the nature of the development process. Indeed one of the most important conclusions to be drawn from the experience of the Bank, in our view, is the value of an institution that is "here to stay." The Bank is relatively invulnerable to short-term political and economic winds and sudden changes of fashion. It can plan ahead and enter into long-term partnerships for the development of vital sectors of the economies of member nations.

The reasons for this special source of strength are familiar. The Bank (though not the IDA component) has a financial base that makes it substantially independent of the national appropriation process. Its relations with members can grow strained because of differences of view on how best to promote development, but the strains need not be compounded by the numerous non-developmental considerations that enter into bilateral relationships. The Bank Group has members on every continent, at diverse points on the political spectrum. Though dominated by its larger shareholders, the smallest subscribers are also members and, as such, entitled to some voice in policy-making—too weak a voice in their view (and ours), but nonetheless audible. For the most part, a member country which succeeds in involving the Bank in its development efforts can usually count on a continuation and intensification of the relationship. There have, of course, been many exceptions. Indonesia went so far as to withdraw from membership between 1965 and 1967. Brazil obtained loans in every year from 1949 through 1954, but relations were often strained; no loans were obtained between March 1954 and January 1958, and none between June 1959 and February 1965. Iran and The Philippines, contrary to their desires, both had to wait until 1957 for their first loans but have since been frequent borrowers. On occasion, Turkey and the World Bank virtually broke off diplomatic relations. In Ceylon in 1970, the conditions attached to a Bank loan became an issue in a bitterly fought election campaign. Despite such instances of temporary strain, and the permanent underlying tension inherent in borrower-lender relationships, the Bank's relations with borrowers have on the whole been harmonious, durable and increasingly intimate.

The Bank's modus operandi. The Bank has put development lending on a businesslike basis and made it respectable to a degree that was not seen previously. The Bank pioneered in raising capital in the markets of the developed countries (and later in the oil-rich de-

veloping countries) for investment in productive projects in underdeveloped countries. It has provided borrowers with an honorable alternative to bilateral assistance.

To help insure effective use of the proceeds of its loans and to flag difficulties as they arise, the Bank has placed great emphasis on the close control of disbursements and the supervision of projects. Its arrangements for procurement on the basis of international competitive bidding are time-consuming, and occasionally irritating to less developed countries that would like larger margins of preference for domestic suppliers, but they have protected the Bank from charges of favoritism among potential suppliers. They have helped to expose the higher economic costs of tied aid. They have minimized the money outlay for goods and services that meet the specifications carried in the invitation to bid.

The Bank is primarily a project lending agency. Its project approach, combined with its concern for all aspects of the borrower's economic condition and prospects, cause it to examine project proposals with great care, to ask many searching questions of would-be borrowers, and to attach a number of conditions to its loans. Although the Bank operates in countries in which corruption is widespread, Bank-financed projects have remained almost totally free of scandal. The Bank's painstaking procedures for the identification, preparation, appraisal and supervision of projects account not only for the absence of corruption but also for the fact that, with few exceptions, its completed projects have done about what they set out to do, and have resulted in rates of return in excess of the rates of interest paid. Rarely have Bank-supported projects become "white elephants."

SELECT WORLD BANK/IDA PROJECTS
(1967 - 1971)

Transportation	Public Utilities	Agriculture	Education	Industry
Roads - 24,000 miles built	Electric generating capacity - 22,500 megawatts built	Irrigation - 4 million acres	800 general secondary and training schools	Aluminum mining, refining and smelting facilities (Brazil)
Port improvements (18 countries): passenger/cargo buildings, new dredges, harbor craft, other equipment	Transmission lines extended (26 countries)	Flood protection and drainage - 1.3 million acres	100 teacher training colleges and 14 agricultural universities built, equipped or expanded	Fertilizer plants (India, Indonesia and Pakistan)
Railroad improvements (15 countries): 51,000 freight cars, 650 passenger cars, 850 diesel locomotives, 3,750 miles of track renewal	Water supply systems improved or installed (23 cities)	Land developed via mechanization, cooperatives, plantations - 1.5 million acres		Nickel mines (Dominican Republic)
	Telephone exchanges expanded, new lines installed (18 countries)	Agricultural research centers funded - 6		Potash mines (Congo)
				Bauxite mines (Guinea)

The Bank as a development agency. Banks are understandably loath to underwrite investments that may turn sour, but development agencies have to be more venturesome. A frequent criticism

of the World Bank as a development agency is that it has been too cautious, that it has skimmed off the cream and left the chancy projects to others. Initially, Bank loans were limited by highly conservative estimates of the credit-worthiness of its less developed member countries. In addition, it is often argued that for too long the Bank concentrated too exclusively on power and transport expansion, and that until recently it was anything but bold in exploring new areas for investment. This criticism is relevant for the first 15 years of the Bank's lending career, but decreasingly applicable since about 1963.

One feature of a development promotion agency, as contrasted with a commercial bank, should be the development agency's concern with institution-building, in other words, establishing and strengthening organizations that permanently improve the country's capacity to cope with its problems. The Bank's particular hallmark in institution-building has been its stress on the autonomous agency or authority, operated by highly qualified, expert managers insulated from domestic political pressures (but responsive, of course, to pressures emanating from the Bank's headquarters). The insulation consists in part of a rate structure or source of income enabling the authority to provide without governmental subsidy the service it is supposed to provide. The greatest successes of the Bank have been in the sectors—electric power and transportation—in which it has concentrated for the longest period of time. In Mexico, for example, a highly inefficient and fragmented power sector has been transformed into a strong national network since 1949, with the aid of 10 World Bank loans.

The Bank's traditional emphasis on insulating the institution from domestic politics can result in institutional behavior so at variance with dominant thinking in the borrowing country as to contribute significantly to the problems of the government or the agency. Insistence on a policy of operation without subsidy can result in injustices to elements in the community that are already disadvantaged. Concern for efficiency may put in the saddle foreign managers and consultants who deny local colleagues sufficient opportunity to exercise judgment, to make mistakes and learn from experience. Instances of each of these follies can be cited; we assert only that the overall record is more than creditable. Investments in the less developed countries have tended to be better planned and executed than they would have been without the Bank's none too gentle prodding. A fair amount of misinvestment has been prevented and a sizable reservoir of competence has been created. In addition, the Bank has long recognized the importance of training nationals of less developed countries. Its Economic Development Institute has improved the qualifications of more than 1,300 EDI Fellows. The Bank also includes provisions for on-the-site training in many of its

projects, but here the results have been only moderately successful—foreign managers and consultants on Bank projects have tended to be more interested in completing their substantive assignments and meeting their deadlines than in training counterparts.

The Bank has been criticized by some for taking a traditional and limited view of the development process. If the Bank did not set the fashion, it fell readily into the pattern of measuring a country's developmental progress in terms of relatively stable price levels coupled with increases in gross national product, investment rates, savings rates or marginal savings rates, export earnings and other conventional macroeconomic indicators. As the 1970s began, the feeling was widespread that the world had learned far too little about how to promote development effectively and equitably. The search for new approaches was never more intense. Most such approaches have sought to reorient development strategy away from maximizing increases in the gross national product of a country and toward alleviating more directly the starkest manifestations of poverty—joblessness, homelessness, malnutrition. But before the Bank is faulted for its prolonged neglect of the social and civic dimensions of the development process, it should be recalled that the countries to which it was lending were, with few exceptions, not notably eager to provide arable land to the landless, to adopt labor-intensive methods of production, to correct regional disparities, or to improve the distribution of income through progressive taxation or other means. Today, as concern with unemployment and poverty is rising, a concern prominently voiced by its President McNamara among others, the Bank staff is engaged in a process of soul-searching, discussed more fully below.

Major Investment Sectors

Transportation. The World Bank Group is a major source of external finance in the transport field; during the past five years its lending is believed to be about equal to that of all other multilateral and official bilateral lenders combined. Transportation also represents the largest single category of IBRD/IDA lending. By June 30, 1971, total lending for railways, highways, ports and pipelines exceeded $6 billion, of which 85 percent had taken the form of Bank loans and 15 percent was in IDA credits. The share of transportation in total Bank lending rose from a modest 18 percent in the pre-1955 period to about 40 percent in the early 1960s. It represented about 30 percent during 1966-1971; this share is not expected to drop by more than two or three percent in the next few years.

Within the transport sector, the trend has been away from railway lending toward lending for highway work. Until 1960, railway lending accounted for over half of all Bank transport lending. Since

1960, highway financing has been dominant. In the decade ending June 30, 1971, highway lending totalled $2.4 billion as compared with $1.4 billion for railways. Highway lending has been concentrated heavily on paved roads of a relatively high standard; very little has been invested in feeder or access roads, though there are plans to increase such investment. No loans have been made for the direct financing of bus or trucking companies. Investment in ports, devoted primarily to the expansion of berthing capacity, has been a modest $626 million. Lending for pipelines and aviation has been still more modest. Thus, transportation, for our purposes, means road and rail transport.

On the whole, the Bank has found it easier to make a positive impact through the creation or reinforcement of a single management agency—a national railway authority, for example—than to organize a comprehensive transport or transport planning agency which would serve as an umbrella for the various authorities, agencies and ministries with operational responsibilities for different components of the transport sector. The Bank has tried in country after country to establish the umbrella-type agency, but success has been elusive. Similarly, the Bank's appraisal of individual projects has been better and stronger than its analysis of intra-sectoral or inter-sectoral priorities. Its project appraisal techniques and analyses have been adopted by a number of countries and are serving them well.

For years, a basic policy prescription of the Bank for both railways and highways was that the price charged to the user should be such that "full costs" would be recovered through freight and passenger rates and from taxes paid by users. There was no precise consensus on what constituted "full costs" but the term was meant to include not only operating and maintenance costs, but depreciation charges and a return on the investment sufficient to finance expansion or renewal of the system. In theory the Bank ought to have made considerable headway in its efforts to persuade railroads to adopt a pricing system based on these principles. In practice, however, the record has been spotty. The Bank has enjoyed some success in moving railways toward a cost-based pricing system, but attempts to persuade railways to recover "full costs" through tariffs have generally failed because the higher tariffs would often have resulted in the loss of highly-prized categories of goods to road transport. In road transport, most Asian and African governments already levied user charges sufficient to cover full costs by most definitions of that term. In Latin America, where road user charges are traditionally low, the Bank has had some success in persuading governments at least to increase these charges. Colombia, after years of Bank prodding, raised gasoline taxes in the late 1960s. Brazil, similarly stimulated, in January 1970 put into effect a new

uniform road tax which has greatly increased tax collections. By and large, however, road taxes are a visible irritant to large numbers of people. Political opposition consequently is heavy, and the Bank's favorite policy prescription has not been widely adopted in Latin America. In our view as well as the Bank's, direct subsidies, which are open and above board, are preferable to hidden subsidies resulting from uneconomic pricing policies.

Another important policy issue in transportation is the matter of intermodal competition between existing road and rail facilities and the concomitant question of new investment in either mode for facilities that parallel an existing highway or railroad. At first the Bank maintained that road-rail competition, though it might be an issue in certain specific instances, was not generally a fundamental issue because each mode would attract and carry its own "natural" traffic. Only recently has the Bank focused on the question of allowing or pressing railroads to compete with the motor transport industry. Since the mid-1960s, it has increasingly emphasized the importance of railway rate policies that permit or induce the railroads to compete with trucking, and has generally tried to persuade railroad authorities to adopt a more commercial outlook. The difficulties associated with developing practical criteria for rail investments, the paucity of evaluations of past Bank investments, and the extremely high cost of investments in this field have given rise to almost continuous debate within the Bank and on the outside as to the wisdom of nearly every major investment decision on railway projects.

Agriculture. During the first postwar decade rapid industrialization was widely regarded as the key to economic growth and higher levels of living. By 1965, however, the Secretary-General of the United Nations could, without being accused of seeking to keep the less developed countries in rustic subservience, warn that:

> Unless production on the farms. . .begins to go up, there is no surplus for saving, no surplus to feed the towns, no surplus to keep pace with rising population and keep down costly imports of food, no agricultural raw materials to feed into industry and, above all, no rise in farm income to provide an expanding market for the nascent industrial system.

The Bank Group has participated in this change in perception. In 1963 it decided to step up its support for agricultural development and to provide substantial assistance for project identification and preparation. As a consequence, Bank/IDA loans and credits for agricultural development between mid-1963 and mid-1968 amounted to almost as much as during the preceding 16 years—about $600 million. Between July 1, 1968 and June 30, 1971, another $1.2

billion was committed—a three-year total equal to the total of the preceding 21 years. The share of agriculture in total Bank Group lending rose from 8.5 percent during the years 1947-1963 to almost 19 percent in 1968-1971. The Bank Group has become the principal external contributor to agricultural investment in the less developed countries, providing in the year ended June 30, 1971 about 40 percent of all foreign financial assistance to agriculture. It expects its share to reach 50 percent by the mid-1970s. Because the overwhelming bulk of agricultural investment comes from domestic sources, however, the Bank Group's share in total investment in agriculture in the less developed countries remains minute—probably between 1 and 2 percent.

About half of all Bank/IDA lending for agriculture has been for irrigation, drainage and flood control. A number of the big dams have not resulted in the increases in irrigated farmland and agricultural output that had been forecast. It is one thing to collect water behind a dam and another thing to move it from behind the dam or from the main distributary canals to individual farm plots. Moreover, since irrigated farmland rarely constitutes more than a small fraction of all farmland, even successful irrigation projects raise disturbing issues of equity and priority. Similarly, the Bank's livestock loans have earned valuable foreign exchange but frequently have benefited primarily the relatively well-to-do ranchers in Latin America. Agricultural credit, largely for medium and long-term loans, appears also to have helped principally medium and high-income farmers.

In addition, the Bank's agricultural lending has been constrained by various policy preferences, including unwillingness to lend for short-term credit; reluctance to finance undertakings involving large local currency and small foreign exchange expenditures, coupled with a few disputes concerning the conditions under which other-than-foreign-exchange costs would be met; a distaste for financing land reform; and ambivalence with respect to loans and credits to intermediary institutions which required financial subsidies from their governments to cover administrative costs or which engaged in lending to farmers on concessional terms. When in the mid-1960s the problems of rural poverty moved into the foreground of development thinking, the cry went up for an "integrated approach," not just to agricultural development, but to general rural development. The Agriculture Projects Department, which had devoted much effort to breaking its work into "Bank-type" projects, began to be criticized for not designing more comprehensive projects aimed at alleviating the plight of the rural poor. In point of fact, there had already been a series of loans for resettlement and colonization, and several comprehensive regional development programs. They had met with mixed results.

What the Bank calls "integrated smallholder development programs" are relatively recent. Bank Group lending for them has involved considerable innovation. Two principal strategies have emerged. One strategy, illustrated by the successful smallholder tea project in Kenya, concentrates attention on a specific cash crop. The Kenya project provided credit and extension services for the tea plantings of smallholders scattered throughout the tea growing zones of the country, together with tea processing factories and access roads. Wider application of this strategy is limited by the disheartening market prospects for a number of cash crops. The second strategy, according to the Bank, is: ". . .to concentrate attention on the overall development of a specific geographical area which has a high potential and is of manageable size. The activities supported include production both for subsistence and for a marketable surplus, and such aspects as soil conservation, local marketing facilities for food surpluses, input supplies, roads and social services. Recent examples of such a strategy are the Lilongwe and Karonga projects in Malawi, the Wolamo project in Ethiopia and the Casamance project in Senegal. The principal danger in this strategy is that too many scarce resources, particularly of trained manpower, may be concentrated on a small area." Willingness to diversify its agricultural lending and undertake comprehensive rural development programs represent long steps forward for the Bank Group. A promising beginning has at last been made, although many questions remain unresolved.

Electricity. In no sector has the Bank Group had a greater impact than in electric power. Its successes, by and large, are not the result of pioneering but rather of the relative ease of transferring the technology of power generation from more developed to less developed countries if foreign exchange for the imported equipment is made available. Through June 30, 1971, Bank/IDA financing for electric power facilities in less developed member countries totalled $5.3 billion, or 27 percent of all Bank/IDA commitments. Through these loans, the Bank has been associated with the construction of about one-fifth of the estimated 100 million kilowatts of capacity now installed in 41 less developed countries and with an additional 16 million kilowatts under construction in mid-1971. For the period 1971-76, Bank/IDA lending for electric power is expected to rise in absolute terms but to drop to about 17 percent of total lending—below the proportion for agriculture, which it previously exceeded. A substantial increase in the number of borrowing countries is planned.

The Bank has approached investment in electric power largely from an engineering point of view, and has evaluated proposed projects primarily in financial terms. In the same vein, from the standpoint of institution-building, the projects of which the Bank is most proud are those in which the power company involved is run on

sound financial lines and is well-managed in terms of minimizing power losses and meeting demand with reliability. The Bank has had considerable success in helping to establish or reorganize existing power companies or authorities and inculcate in them planning capabilities, modern managerial procedures, and tariffs that aim at a reasonable rate of return on the investment. Brazil, India, Malaysia, Mexico, Thailand and Pakistan come to mind as examples. Another facet of Bank lending in the power sector, and another reason why its specialists prefer to concentrate Bank/IDA investments in selected countries, is the Bank's strong interest in establishing coordinated national power systems or, in large countries like Brazil, regional systems. In a number of countries the electric power sector, when the Bank made its first loan, was characterized by scattered generating plants and distribution facilities owned and operated by a variety of companies or public authorities. The Bank has often helped bring into being a coordinated national system, in which the various subsystems have been interconnected to achieve economies of scale. The Bank pioneered in the mid-1950s with respect to methodology for comparing hydro versus thermal plants and considers this issue in each loan appraisal in which it is relevant. In the past, the Bank has not made loans explicitly for village electricifcation. Today it is investigating the possibilities for more active assistance in this field.

Education. In terms of the volume of resources committed and the duration of its involvement, the Bank's role in financing education projects is much more modest than its role in agriculture, transportation, or electric power. From the time of its entry into the field in September 1962 through June 30, 1971, the Bank/IDA approved education loans and credits to 42 countries for a total amount equivalent to $431 million, of which 44 percent was committed to Africa. Projections for the five-year period ending June 30, 1976 envisage operations in 60 countries and total lending of about $800 million. The Bank expects to become, if it is not already, the largest outside financier of education assistance to less developed countries. It has concentrated on capital financing aimed at the middle reaches of the school system—in other words, on constructing and equipping secondary schools and such related facilities as student dormitories. Equipping education facilities has meant financing laboratory and workshop articles needed for teaching science and for vocational training, and providing books for libraries. The technical assistance component in Bank lending has been quite small; this kind of assistance has usually been supplied through UNESCO. Almost a quarter of the Bank's financial assistance has gone to universities and post-secondary education, and virtually none of it directly to primary education.

Telecommunications. In the telecommunications sector, the Bank's involvement dates back to 1949, but more than two-thirds of

the nearly $600 million provided by the Bank and IDA was committed during the five-year period ending June 30, 1971. The World Bank is not the principal source of external finance in this field; most of the foreign finance appears to have been provided by bilateral lending agencies and by suppliers in the industrialized countries. As in electric power and various other sectors, the Bank has helped introduce better procurement practices into the telecommunication sector. International competitive bidding is said to have led to remarkable reductions in cost—about 30 percent on average and much more in some cases.

Water supply and sewerage. It takes some stretching of the English language to consider water supply and sewerage facilities a "sector" of the economy, but the Bank does so, occasionally placing the word in quotation marks. This is an area in which the principal multilateral source of development finance is not the World Bank but the Inter-American Development Bank, which in the 1960s provided borrowers in its region almost 2 1/2 times the amount lent by the Bank/IDA to all regions during the same period. As of June 30, 1971, cumulative commitments of the Bank and IDA amounted to a modest $329 million, but more was lent in fiscal 1971 than in all the years before then. All lending to date has been to urban areas; no rural water projects had been approved as of mid-1971. The Bank considers its concentration on urban areas justified for many of the same reasons that have justified its concentration of electric power investment in cities, plus at least one other reason: the public health effects will be greatest where population is densest.

If this analytical history had been written from the standpoint of borrowers, certain shortcomings of the Bank might have been more heavily underscored: the limitations of its project approach, the length of time it takes to activate a project, the attitudes of some of its negotiators, the relative absence of nationals of less developed countries in important posts and the Bank's confidence in outside consultants, some of whom may be no better qualified than some local personnel. But few would disagree, we suspect, with the conclusion that the Bank has had a significant and on the whole beneficial impact on the areas in which it has concentrated its lending.

The Second Quarter Century

Although their vision of the future was inevitably imperfect, the Bretton Woods participants succeeded in creating two institutions that have managed to adapt to the postwar world surprisingly well. Nevertheless, the world is changing, and the Bank faces a future as uncertain in some ways as that confronting its Bretton Woods founders. Changes in the power and influence of various countries and blocs cannot fail to affect the organization and governance of the

Bank. The voting strength of the United States has declined from 37 percent in 1946 to less than 25 percent in 1971. The European Community, with the accession of the United Kingdom, will rival the United States in economic weight and, in terms of foreign trade, will be substantially larger. Japan has become not only a world economic power but an important contributor to the Bank. It is possible that Romania or Hungary, or both, will become members. If the People's Republic of China joins the Fund and the Bank it may be taken for granted that the Soviet Union and other countries of Eastern Europe will not be far behind.

We take it for granted that the Bank Group will continue to lend exclusively, or nearly so, to the less developed world. But this world is also in process of change. Less developed member countries are increasingly able to manage their own economic affairs and although their need for, and ability to use, development assistance increases rather than diminishes, their unwillingness to accept it on former terms is, in many quarters, becoming evident. Furthermore they have created institutions, among them the United Nations Conference on Trade and Development (UNCTAD), which, if lacking in power, do not lack the ability to articulate their cause. If the Bank is successfully to adapt itself to the kind of change foreshadowed at this time, certain issues will have to be faced. If the Bank Group is to serve effectively all of its less developed members, a continuous expansion of IDA funds must be assured. But if the Bank proper is to finance its loans principally by borrowing in capital markets, it still needs to pursue policies that command confidence in these markets.

The Bank's primary dependence on capital markets rather than governments for its funds is, in many ways, a source of strength and independence. Moreover, the multinational support for IDA financing adds something to Bank Group maneuverability. Still , it cannot be denied that dependence on capital markets and on legislative appropriations in the wealthy countries limits, in some fairly important respects, the ability of the Bank Group to function as an effective financier of development. For example, if this dependence were relaxed the Bank's management might be freer, when member countries nationalized foreign properties, to adapt to this situation on the basis of its own judgment of the overall performance of the member country without excessive concern for the reaction of legislatures and capital markets. The Bank might also be better able to encourage industrial development in less developed countries by granting greater preference for local procurement without concern for the export prospects of its richer members. Less attention to what capital markets consider sound investments might permit a more relaxed attitude toward financing current costs or employment-expanding public works programs. And if the Bank could es-

cape from the vagaries of capital markets, it would be possible to operate without so great an emphasis on liquidity.

It is, of course, possible to imagine the evolution of the Bank into a very different kind of international institution than it now is. If member governments were willing to double their paid-in capital contributions, the interest-free capital of the Bank would be increased from its 1971 level of $2,150 million to over $4 billion. This action plus various changes in terms of lending might be expected to double the net profits of the Bank. If something like $400 million were transferred annually from profits to surplus, by 1980 the equity of the Bank could approach $10 billion. This could for all practical purposes make the Bank independent of the short-term vagaries of capital markets. Furthermore, if the Bank Group could at the same time free itself from the triennial IDA replenishment exercise by transfers of Special Drawing Rights (SDRs), by some form of international taxation, or by assignment of some of the revenue from international schemes to exploit the economic resources of the seabeds, the Bank Group's freedom of action would be enormously increased. Such an evolution is not impossible, but speculation on this course of development carries us farther into the future than the authors are willing to venture. Let us assume that certain fundamental characteristics of the Bank Group remain unchanged; i.e., that it continues to lend predominantly to less developed member countries; that it continues to finance Bank loans principally through the sale of its own securities; that it continues to increase its soft loans from IDA; and that, except for IFC, it lends on the basis of a government guarantee. How will such an institution adapt itself internally to changing membership and increased size; and how will it adapt itself externally to the changing world in which it is called upon to operate?

Financial prospects. The most critical financial element for the future of the Bank Group as a development institution is the replenishment and increase of funds available to IDA. Without IDA the Bank could, no doubt, continue to lend exclusively to middle-income countries—most of Latin America, Iran, Malaysia and some other countries in Asia, and a few Middle Eastern and African members. Commitments could proceed at a level of $2 to 2 1/2 billion per year and could even increase over time as the creditworthiness of these countries improved. The financial communities of the world would, no doubt, view the Bank as a highly successful institution with net profits of $200 million or more ploughed annually into surplus rather than dissipated to IDA or other "unprofitable" uses. There would be no difficulty in selling the necessary quantity of Bank securities in capital markets. Moreover, as early borrowers in Europe, Japan, Australia and elsewhere paid off their loans, Bank lending to the less developed countries could increase.

But without IDA the Bank Group would either have to terminate much of its lending in India, Pakistan, Indonesia, Ceylon and most of its member countries in black Africa, or assume far greater risks of default than it has ever before been willing to assume.

The Bank needs a large increase in IDA money if it is to serve the development needs of its lower income members. An increase, however, from the $800 million of the third replenishment to the $1.5 billion recommended in 1975 by the Pearson and Peterson Commissions is difficult to envisage unless there is a marked shift in emphasis from bilateral to multilateral assistance with the Bank Group a favored intermediary. It is possible, but not probable, that more generous legislative behavior would be encouraged by a change in replenishment procedure whereby high-income members would make their contributions in the form of 50-year, no-interest loans (the form taken by the Swiss contributions to IDA) rather than as grants. A five-year replenishment cycle might also help. Beyond this, a number of suggestions have been offered for alternative sources of IDA financing, for example: the Pearson Commission recommended that bilateral donors commit half or more of the interest payments due them on bilateral loans to less developed countries to subsidize interest rates on Bank loans. The "Horowitz Plan" suggested that "soft money" be provided by borrowing in capital markets, with the richer countries financing the difference between the borrowing rate and lending on IDA terms. There have been many suggestions for an international tax on the consumption of some widely used commodity or representing some small fraction of national incomes, the proceeds of which might be made available for development. There have also been suggestions that international exploitation of the resources of the seabeds could yield returns to be channeled into the development of poor countries, with IDA as one of the channels. None of these proposals, however, has evoked as much public interest either in rich or poor countries as the developmental use of the Special Drawing Rights issued by the International Monetary Fund. Nearly every speaker from a less developed country at the Bank-Fund meeting in 1971 recommended a tie between the issue of SDRs and the provision of development finance, usually under the auspices of IDA.

Although there is much to be said for a link between the creation of SDRs and development assistance, the establishment of such a link would require international agreement achieved in the face of formidable obstacles. It is our opinion that although SDR creation and transfer may become a significant source of development finance by the end of the 1970s, it is not likely to be a substitute for current forms of IDA replenishment in the near future. What the next IDA replenishment will bring forth is anyone's guess, but it seems opti-

mistic at present to expect any more than $1.2 billion a year for the period 1974 to 1977, rising perhaps to $1.5 billion by 1980. Before the end of the decade, however, alternative sources of IDA financing may be found.

A strong case can be made for the proposition that the Bank should expand its activities as rapidly as it prudently can. The Bank has undertaken calculations for planning purposes of the requirements of creditworthy member countries for borrowing on Bank terms. It has concluded that Bank lending commitments might increase from $1,900 million in 1973 to $3,500 million in 1978—an increase of about 10 percent a year in monetary magnitudes and 8 percent in real terms. A careful study undertaken in the Bank toward the end of 1971 indicates that the projected volume of financing is feasible. It would require gross borrowing of over $11 billion in fiscal years 1974-78, and net borrowing of $6.6 billion. This is about double the expected volume of borrowing in the fiscal years 1969-73. The principal sources are expected to continue to be central banks for short-term funds and the capital markets of the world for medium- and long-term borrowing. So long as the Bank depends heavily on borrowing in capital markets, it is necessary to maintain a high degree of liquidity. The problem of financing the projected expansion of Bank lending does not seem to be serious so long as the credit standing of the Bank is maintained. If, then, we accept the planning figures suggested above, total lending by the Bank Group might, towards the end of the 1970s, consist of the Bank lending at the rate of $3,500 million a year, an IDA lending at somewhere between $1 and $1.5 billion and an IFC investing $200 million a year.

The scope and direction of Bank lending. During the past decade there has been a rapid expansion of the Bank's lending in industry, agriculture and education, which reduced the share in total lending of transportation and electric power. Urban development, tourism and family planning became areas of project lending. The strictures of the Articles of Agreement on local expenditure financing have been sufficiently loosened to permit the choice of almost any project the Bank deemed worth financing within the customary limits of Bank projects. This loosening may not be sufficient to permit the financing of employment-creating public works projects when practically all inputs are of local origin, although the IDA credit for the Kadana irrigation project in India, committed in 1970, had a local currency component of 93 percent. At the same time reinterpretation of the Articles of Agreement has provided more room for program lending, although the Bank's management has so far taken little advantage of this new latitude.

If we are to take seriously various pronouncements of management, there have also been significant changes in the Bank's con-

ception of what constitutes development. If development means a sustained increase in the capacity of governments to satisfy social preferences and needs of people, then to contribute to development, the Bank must consider how a project reduces unemployment and underemployment, leads to a more equitable distribution of income, and encourages wider participation by the citizenry in decision-making. To meet these requirements, however, a considerable expansion in the kinds of projects and policies the Bank is willing to support would appear to be necessary. To date (mid-1971), there is a sizable gap between the public pronouncements of some of the Bank's spokesmen and its day-to-day practice.

The very rapid expansion of Bank Group lending in fiscal years 1969, 1970 and 1971, which saw roughly a doubling of commitments, placed a heavy strain on Bank staff, augmented as it was by a substantial number of new recruits. Fiscal years 1972 and 1973 are intended to be years of consolidation: Bank commitments in these years are expected to be $1,800 million and $1,900 million, less than the $1,921 million committed in FY 1971, and despite some increase in IDA credits, the pressure on staff should be eased. But beginning in FY 1974, plans call for an expansion of Bank lending of about 8 percent a year in real terms. Whether the IBRD can successfully recruit, organize and train the staff needed to meet its projected lending program depends on the types of projects financed and the distribution of loans among economic sectors.

Power, rail and trunk road projects in general require smaller staff inputs per dollar lent than industrial and agricultural projects and much less than projects in education, family planning and urban development. Large projects in any sector economize staff time as compared with small projects. The large-scale irrigation and land clearance projects favored in the early history of the Bank required much smaller staff inputs per dollar lent than later types of agricultural loans. Project appraisal techniques focusing exclusively on considerations relating to a projected rate of return are less time-consuming than those that attempt to assess various side effects. Serious attempts to maximize the contribution of domestic inputs, for example, by breaking large road construction projects into small parcels manageable by local contractors, require sizable staff inputs for appraisal and supervision. A marked shift in Bank Group lending away from infrastructure projects toward a broader choice of projects, away from large-scale projects toward smaller ones, and away from concentration on rates of return toward attempts to assess effects on employment and income distribution would all tend to increase staff requirements per dollar of financing.

On the other hand, there are certain potential influences on Bank Group lending that tend in the opposite direction. International com-

petitive bidding makes enormous demands on staff time; the larger the local expenditure component in project financing, the smaller will staff requirements be per dollar of lending, and there is a significant trend in Bank financing toward covering a larger share of local costs. Program lending obviously requires a much smaller staff input per dollar than does project lending. Furthermore, the ability of less developed member countries to manage their own economic affairs, including the selection and supervision of projects, continues to improve. It is not to be expected that the Bank will need, indefinitely, to immerse itself as deeply in all stages of the project cycle as it has in the past. Finally, as we indicate below, the Bank could, if it wished, rely more heavily on other international agencies than it has to date.

Terms of Bank lending. The terms of Bank Group lending exhibit a certain inflexibility. The Bank lends to all creditworthy member borrowers at the same interest rates, with the maturity of its loans related to the life of projects. Maturities of 20 years are typical. IDA lends at a service charge of 3/4 of 1 percent, on 50-year maturities with a 10-year grace period. Neither Bank nor IDA terms make any allowances for differences in credit- or IDA-worthiness among borrowers. Some 15 countries borrow both from the Bank and from IDA, and the blending of Bank and IDA terms makes possible a substantial variation in their average borrowing rates, but this is the only element of flexibility. The Bank has been resistant to suggestions from UNCTAD and other sources that might increase flexibility.

It is our view that the Bank might well reconsider its lending terms. From 1965 to 1967 the Bank lent to two so-called "market eligible" member countries at 3/4 and 1 percent above its standard rate. These were countries able to meet some but not all of their external borrowing requirements in capital markets. By 1967 a sharp rise in the cost of Bank borrowing had led to a change in the relationship between these costs and standard lending rates, and the special (high) rate to market-eligible countries was abandoned. The continued rise in borrowing interest rates was not accompanied by a commensurate rise in Bank lending rates, and by 1969 the spread had become negative. In FY 1971 the weighted average cost of Bank borrowing was 8.07 percent against a lending rate of 7 1/4 percent, yielding a negative spread of about 4/5 percent. This reduced Bank profits below what they might have been by a figure that in FY 1971 may have been as much as $40 million. These foregone profits could have been used to supplement IDA funds, subsidize interest rates to some of the Bank's poorer borrowers who are nevertheless too rich to be eligible for IDA credits, or to increase the Bank's equity position.

The chief financial problem of the Bank Group over the next decade will not be how to meet the borrowing requirements of its middle-income members but how to meet the requirements of poor countries. Some transfer of income from its market eligible borrowers and the upper tier of its middle-income members to poorer countries could make a considerable contribution to meeting these requirements. We suggest a return to the 1 percent spread (above the standard rate) for market eligible countries, and a spread of at least 1/2 percent for the most creditworthy of the Bank's middle-income borrowers. If the weighted average of the Bank's borrowing rates was 6 1/2 percent, and its standard lending rate 7 percent, this would mean a lending rate of 8 percent to market eligible countries and 7 1/2 percent to other highly creditworthy borrowers. With a rate of price inflation of internationally traded goods of at least 2 percent per year in all countries whose currencies are lent by the Bank, this would mean lending rates in real terms of 6 and 5 1/2 percent and perhaps less. Such rates do not seem exorbitant. The additional profits generated by these lending rates could, as we have noted above, either be used to subsidize interest rates to the poorer Bank borrowers or be transferred to IDA.

Not only are Bank lending terms unnecessarily inflexible but so are those of IDA. Although the 3/4 percent service charge has, since the beginning of IDA, meant the provision of credits at a negative real rate of interest we do not suggest a change in this service charge. The 50-year maturity of IDA credits, on the other hand, seems to us to have become indefensible. No one can foresee what is going to happen to a country's development and credit standing 50 years hence. The economic prospects of South Korea and Taiwan seemed highly suspect 10 or 12 years ago, but their economic achievements since then have been spectacular. We suggest that the maturity of IDA credits be changed from 50 to 30 years, leaving the 10-year grace period intact. The Bank or the borrower could then request a renegotiation of the credit at the end of 20 years either shortening or extending the credit within an upper limit of 50 years. These suggested changes in the terms of Bank Group lending would make it possible to adapt interest charges better to the borrower's ability to pay, accomplish a transfer of funds from the wealthier Bank borrowers to the less wealthy, and relieve the Bank of some of the onus of excessively long-term forecasting.

The Bank Group and the private sector. The Bank is dependent on capital markets for the bulk of its funds; and the Bank Group as a whole has made close to 20 percent of its total commitments to private enterprise in borrowing countries. On the whole, the trend in less developed member countries has been toward more rather than less government intervention in the economy, and changes in Bank policy foreshadow a decreasing share of Bank Group commit-

ments in the private sectors of its member countries. The Bank Group management has attempted to build up the IFC as a strong protagonist and supporter of the role of private enterprise in the development process.

In the minds of most people the Bank has the reputation of being a bastion of private enterprise. It comes as a surprise to many that over 80 percent of Bank Group commitments are to public sector enterprises, and that this percentage will inevitably increase. The Bank began to finance industrial enterprises in the public sector in the late 1960s and, in FY 1971, of 11 industrial enterprises under consideration for Bank or IDA financing, 10 were in the public sector. The shift in policy in 1968 permitting financing of government-controlled development finance companies has been followed by commitments to more publicly controlled companies than to privately controlled enterprises. This predominant and growing concern with public sector investment has inevitably involved the Bank staff in questions of government ownership, management and policy, that tend to handicap in certain respects the attainment of the Bank's objectives in the private sector. Bank missions rarely, if ever, turn up investment opportunities of interest to the IFC; IFC personnel are rarely, if ever, included in the membership of Bank missions; country economic reports are usually not very illuminating on the problems and prospects of the private sector; and, in general, the IFC tends to be regarded by most of the Bank staff as a relatively insignificant appendage.

Beginning with the McNamara regime, attempts have been made to strengthen the IFC and to make it into the central instrument of Bank Group action in the field of private investment. A degree of success has attended these efforts. The Bank's efforts to develop capital markets in borrowing member countries are now centered in the IFC, and the Bank Group can and should make a substantially greater contribution in this area than it has in the past. The IFC, moreover, is now actively immersed in the Bank's attempt to move beyond ad hoc financing of industrial projects toward a broader strategy of industrial development. But the IFC is still too loosely related to the central operations of the Bank to assure that the potential contribution to development of private investment and private enterprise is fully taken into account. If the IFC is to become the Bank Group's chosen instrument in the development of the private sector, its staff should frequently, if not regularly, be included in Bank economic missions. Country economic reports should all include sections on the problems and prospects of the private sector. And the rotation of staff among various assignments in the Bank Group should include at least some positions in the IFC. The executive vice president of the IFC should become a high official, perhaps a vice president, of the Bank itself with authority over Bank personnel concerned with private sector matters.

Increasing economic nationalism in less developed countries suggests that the terms on which foreign private investment will be permitted and encouraged in the future are likely to be altered. Joint ventures, management contracts and similar arrangements will increasingly take the place of complete foreign ownership. Nationalizations and expropriations have occurred, chiefly in the fields of natural resources and banking and insurance. In the rapidly growing manufacturing area it is not so much investment that is welcomed as investment accompanied by new technical, managerial and marketing expertise. The growing volume of nationalizations inevitably confronts the Bank with a serious problem. Its developed member countries and private investors will look to the Bank to stand squarely for prompt and equitable compensation, while its less developed member borrowers will expect an attitude and behavior more responsive to their developmental difficulties. It would be convenient if individual cases could be referred to the International Centre for Settlement of Investment Disputes but many less developed countries are not signatories of the convention.

One of the most difficult problems involving private foreign investment that the Bank will confront in the 1970s is a rethinking of its lending policy in member countries which have nationalized or expropriated foreign-owned properties. Early in its history the Bank acquired kudos in financial communities around the world by the firm stand it took on the importance of settling defaulted government debt. On a number of occasions the Bank has ceased lending or has refused to lend to a member country which has expropriated private property. This happened in Algeria after 1964, in Indonesia during the Sukarno regime, in Iraq in the middle 1960s, in the United Arab Republic throughout most of the 1960s and in the Congo (Zaire) from 1961 to 1969. But instances of nationalization and expropriation appear to be increasing. As the Pearson Commission observed, it is "unrealistic to expect governments of capital-exporting countries to remain passive when the property of their citizens is subject to discriminatory or confiscatory treatment by other countries." There are considerable differences in the policies of capital-exporting member countries, ranging from soft to hard line postures, and the gap between these positions and those of the less developed capital-importing countries tends to be even greater. Consequently, the Bank must make its own judgments. The Bank is given some flexibility by the diversity of views among its executive directors. But there is no blinking the fact that its judgments must take into account the necessity of raising funds through the sale of Bank securities in capital markets and obtaining contributions to IDA.

The Bank as Part of an Emerging International System

The Bank and its affiliates have become an increasingly integral part of the complex of international machinery that has grown up

since the close of World War II. Twenty-five years ago, the Bank management did not need to think of its future as linked to that of other international agencies. Independence was considered essential to obtain the desired reputation as a hard-headed, business-like, non-political organization and to gain the confidence of the private investors. Once the Bank's credit was firmly established this attitude changed, influenced also by: the cordial personal relationship between UN Secretary-General Hammarskjold and Bank President Eugene Black; the formalizing of various ties between agencies without damage to the Bank's reputation; the establishment of a UN Special Fund to provide, among other things, grants for preinvestment surveys and studies; and the need to work out a modus vivendi with a new potential competitor, the Inter-American Development Bank. The change in attitude toward other agencies accelerated during the 1960s with the decision of Bank President George Woods to enter into formal cooperative arrangements with FAO and UNESCO and informal cooperation with UNCTAD; the spread of regional development banks to Africa and Asia; and the relative ease of collaboration by the Bank with the OECD and its Development Assistance Committee, as well as with the financial institutions of the European Economic Community.

Whatever the general climate of inter-agency collaboration in the 1970s may be, the Bank will need to integrate its activities more closely with some international institutions than with others. Among the specialized agencies of the United Nations, the Bank's relations with the IMF—about the only agency it regards as an equal—will continue to be extremely important. Acceptance of the Pearson Commission recommendation of joint country missions would assure the giving of consistent advice to member countries, would substantially improve the economic reporting of both agencies and would effectively direct attention to neglected relationships between stabilization and growth policies. And if, at some stage, a link is established between SDR creation and development finance via the International Development Association, close cooperation between the two agencies would be almost inevitable.

With respect to other specialized agencies, the Bank has already helped to make the Food and Agriculture Organization and the United Nations Educational, Scientific and Cultural Organization more development-oriented and investment-oriented than they were initially. The device has been the cooperative arrangement, now extended also to the World Health Organization, whereby certain units in those agencies are 75 percent-financed by the Bank to assist governments in project identification and preparation. The cooperation to date consists basically of the other agencies working on projects designated by or agreed upon with the Bank in order to keep its project pipeline well filled. The Bank has specifically reserved to itself

full responsibility in project appraisal and supervision. These projects advance the basic objectives of the agencies that helped identify and prepare them. But the rather modest role assigned to those agencies, and the rapid rate at which the Bank has been building up its own staff of agricultural and educational specialists, do little to prevent further disintegration of the concept of functional specialization within the UN family. It would seem desirable for the Bank to involve these specialized agencies more actively in project appraisal and supervision.

As an executing agency for the United Nations Development Program (UNDP) the Bank, which is investment-oriented, has been more successful than the other specialized agencies, which have tended to be technical assistance-oriented and to have had difficulty providing preinvestment surveys that could serve as a basis for investment decisions. The Bank has provided most of the follow-up investment that has resulted from UNDP-financed preinvestment surveys. But the present relationships between preinvestment and investment financing agencies are open to challenge because of the administrative split they preserve between two stages of a single economic process and the arbitrary division between grant and loan aid that they perpetuate. Today, a member government too rich to qualify for soft loans from IDA can nevertheless obtain grant financing from the UNDP. At nearly $250 million per year, the UNDP already represents a sizable though not massive source of grant aid. With the burgeoning interest in meeting the special needs of the least developed countries, in programming external assistance on a country rather than a project-by-project basis, and in adjusting the burden of debt-service, the international community will surely scrutinize anew the current criteria for allocating grant aid and loan aid.

The regional development banks, which are not part of the UN system, have seldom served as executing agencies for the UNDP or provided any significant amount of follow-up investment. If there are going to be regional development banks—and it seems plain that there will be—strengthening them and helping to develop a specialized role for them would appear to be to the advantage of the World Bank. The IBRD has already helped to build up the regional banks. The regional banks at present would probably oppose any formal or semi-formal division of labor. They fear they would get the short end of the stick; the division would reflect current differences in resources and competence. The evolution of a division of labor will in any case differ from region to region. We have only a few suggestions to make: one possibility is a more strenuous effort by the World Bank to involve the regional banks in joint financing operations on terms which make them genuine partners rather than junior partners. Another is for the World Bank to pro-

pose a delegation of certain functions to the regional banks—preparation of certain country economic reports, lending for so-called regional integration projects, lending for the refinancing of export credits granted by less developed countries and lending for types of projects (feeder roads?) which can best be supervised by an agency more at home in the region than the World Bank. The latter might even make the regional banks fiscal agents, or provide them with a portion of the resources required to carry out functions assigned to them. No doubt these proposals would meet resistances from both sides in the near future, but we are trying to look beyond that and consider how the different strengths of these institutions can best be used.

In summary, if those member countries most in need of development are to be effectively assisted, the Bank Group not only needs a substantial increase in IDA funds but must continue to be part of a larger international development effort in which the trend of official development assistance, the earnings of less developed countries from international trade and, one hopes, their receipts of foreign private investment and technology as well, are clearly rising.

[Excerpted from The World Bank Since Bretton Woods. Washington, D.C.: The Brookings Institution, Summer 1973.]

Why Regional Development Banks?

Manmohan Singh

[The 1960s witnessed the establishment of a number of multilateral financial institutions, each catering to the needs of a specific developing region or subregion. The most important of these institutions are the Inter-American Development Bank, which began operations in 1960, and the African and Asian development banks, which began operations in 1966. These regional development banks have as their objective the acceleration of the economic and social development of the developing countries in their respective memberships.]

Three sets of ideas widely held in the developing countries in the 1950s contributed to the establishment of regional development banks. First, there was a strong feeling in many of these countries that the flow of external capital for financing their development was greatly inadequate in relation to their needs and that the existing international mechanism for the transfer of long- and medium-term capital could not be relied upon to fill the gap. Second, the existing international credit mechanism was considered qualitatively defective in that it did not provide finance for many types of projects and activities that could make a highly productive contribution to economic development. Third, the developing countries came to realize that the existing international financial institutions could not be expected to take care of the many financial problems inevitable in the implementation of regional cooperation programs which were receiving considerable emphasis by the mid-1950s, particularly in Latin America. Underlying all

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of these views was a persistent feeling in developing countries that the policies of existing international fiancial institutions such as the World Bank were excessively influenced by the views of the developed countries, which held the great majority of voting rights in these institutions.

In the early 1950s, total bilateral official development assistance was very small. The major sources of the flow of external capital to developing countries were direct private foreign investment, loans from the U. S. Export-Import Bank and from the World Bank. Since there was considerable uncertainty regarding the future flow of direct private foreign investment to the developing countries and since a number of these countries believed that reliance on this source of foreign capital was not desirable, the developing countries came to believe that loans from international financial institutions, particularly the World Bank, should play the dominant role in providing them with foreign capital. In 1951, however, the World Bank was lending to the developing countries at a rate well below $300 million annually, and it was not expected to exceed this figure in the next few years. Not only was this level of aid unsatisfactory, but the developing countries were also not very happy with the geographical pattern of World Bank loans. Until 1948, the Bank's activities were concentrated on the reconstruction needs of the postwar world economy, and a large part of its loans went to European countries. With the launching of the Marshall Plan for European recovery in 1948, the World Bank turned its attention to development lending. However, until the mid-fifties, a considerable proportion of the Bank's loans went to countries like Australia, Italy, Japan and South Africa, rather than to the less developed countries. As late as 1959, the notion that the World Bank's primary responsibility was to help the developing countries had not yet gained general acceptance. Writing in that year, Sir Alec Cairncross, at one time the director of the Bank's Economic Development Institute, stated: "The Bank's international role need not consist in raising capital in developed countries in order to lend it to underdeveloped countries. It may borrow from either group to lend to either group."

The Bank justified its lending policies during the 1950s by arguing that the volume of its lending was limited more by the shortage of sound capital projects in the developing countries than by any unwillingness on its own part to expand the scale of its operations. The Bank considered that an attempt to increase its lending to developing countries in the face of their limited absorptive capacity would not be very productive and might have adverse effects on the Bank's credit standing in the capital markets. Opponents of this view argued, however, that the Bank's inability to lend large amounts of money to the developing countries was partly the result of the

narrow limits it had imposed on its lending activities. The Bank's articles of agreement provide that its loans are to be granted only for high-productivity projects and that, except in special circumstances, the amount of a loan is not to exceed the foreign exchange cost of a project.

The World Bank's practice of financing only the foreign exchange cost of a project, leaving the cost which can be met in local currency to the borrower, was explained as an inducement to the borrowing country to adopt maximum self-help policies to raise local resources and to refrain from incurring an excessive amount of foreign debt. The Bank's practice also had the merit of administrative convenience since it enabled the Bank to supervise disbursements and to release foreign exchange only against certified expenditures. The critics of the World Bank argued that they fully shared the Bank's concern that its loans be used to promote genuine development and to supplement rather than to supplant domestic efforts of the borrowing countries. They maintained, however, that an excessive emphasis on a "specific project approach" was no guarantee against waste, since by providing finance for one project, the World Bank might release existing national resources for other, less productive uses. In their view, only a broader "program approach," involving an appraisal of a country's total development effort, could show whether the projects presented for international financing were highly productive and whether the international assistance requested was a genuine addition to domestic efforts.

Writing in 1960, Andrew Shonfield, a sympathetic critic of the World Bank, stated that the Bank's excessive emphasis on financing only the foreign exchange cost of specific projects constituted "a profound weakness in the whole philosophy of lending enshrined in its rules" and that it had helped to introduce an irrational bias into the development programs of the poor countries in favor of an excessive use of scarce capital and too little use of locally available surplus labor. Shonfield noted that agricultural investment in the developing countries barely figured in World Bank lending except in cases of big conventional projects such as a dam with an irrigation system.

The developing countries' dissatisfaction with the World Bank did not rest only on the Bank's refusal to finance entire programs rather than specific projects or to finance the local costs of projects. There was considerable resentment against the World Bank for its allegedly paternalistic approach to the problems of developing countries and for what these countries felt were attempts to dictate economic and social policies of the borrowing countries. For instance, many developing countries resented the Bank's open hostility to the increase in public ownership in the developing countries. The Bank

consistently refused to finance publicly owned industrial projects (as distinguished from infrastructure projects). The Bank's justification for this policy was that its experience indicated that private ownership was the best way of assuring continuity of efficient management and sound investment policies. Others, however, were of the opinion that its policy was guided more by ideological considerations than by an objective analysis of social and economic factors influencing economic development.

Under its articles of agreement, the World Bank cannot lend money to private firms if these loans are not guaranteed by the governments of the countries concerned. But many governments are unwilling or unable to provide such guarantees, and many businessmen are reluctant to accept them for fear of losing their operational flexibility. Moreover, the Bank can make only fixed interest loans; it is not authorized to subscribe to equity shares or provide other kinds of risk capital. Some considered that these features of its lending activities hampered the growth of private enterprise in the developing countries.

While the dissatisfaction of the developing countries with the functioning of the World Bank in the 1950s generated pressure for a modification of some of the Bank's policies, the developing countries recognized that their weakness in terms of voting rights in the World Bank severely limited the extent to which they could transform the Bank's operations. The voting rights of the members of the World Bank are based on their subscriptions to the Bank's capital and these subscriptions are in turn based on each member's quota in the International Monetary Fund (IMF), which is designed to reflect the relative economic strength of various member countries. As such, the great majority of voting rights rests with the developed countries, and accordingly, these countries have the predominant voice in the Bank's management. This factor led the developing countries to press for the establishment of regional banks, which would serve their particular area, and be less subject to domination by the developed countries. The developing countries hoped that these new banks would be more responsive to their own needs and aspirations.

It was with the aim of meeting these limitations in the international financial mechanism that in 1954 a group of six prominent Latin American citizens formulated a proposal for the creation of an Inter-American Development Fund. This proposal, submitted to the Organization of American States, stated in part:

> Resources of international credit institutions have reached private entrepreneurs only in exceptional cases, since both the International Bank and the

> Export-Import Bank have preferentially granted loans to governments and always require government guarantees when financing private projects. Here is an evident contradiction: on the one hand, the role of the private entrepreneur in economic development is highly exalted, and, on the other, conditions are demanded of him which often cannot be fulfilled and which tend to limit his initiative and freedom. The situation created for the private entrepreneur is therefore inferior to that of the entrepreneur in large foreign countries, who has ready access to sources of credit and to international techniques. The new Fund would help in correcting these conditions, and would strengthen the role which the private entrepreneurs must play within Latin America's economy.

The IDB did not begin operations until 1960; the African and Asian development banks not until 1966. Their aims and impetus had been set in the mid-fifties however. Their principal aim has been to promote public and private investment in these countries through a mobilization of local and external financial resources. For this purpose, they seek to supplement, with their own activities, the work of other existing agencies, both national and international, that are engaged in financing economic development. However, the regional banks are not meant to be merely financial institutions in the narrow sense of the term. They are required by their charters to take an active interest in improving their members' capacity to make profitable use of local and external capital and therefore engage in technical assistance activities such as feasibility studies, evaluation and design of projects, and preparation of development programs. The banks have also been charged with the responsibility of conducting their operations in a manner that will promote regional economic cooperation.

Broadly speaking, the three regional banks are designed to perform at the regional level most of the functions performed at the global level by the World Bank Group (the World Bank and its two affiliates, the International Finance Corporation and the International Development Association). Like the World Bank, they use their ordinary capital resources (consisting of members' contributions to the ordinary paid-in capital and funds raised in the financial markets) for making or guaranteeing loans on normal commercial terms to developing member countries for financing sound and productive projects. However, whereas all loans granted by the World Bank to borrowers other than member governments must carry a government guarantee to repay the principal and to pay the interest charges, insistence on such a guarantee is not obligatory in the

cases of the three regional banks. In this respect, their operations resemble those of the International Finance Corporation. Moreover, like the IFC, two of the three regional banks, the African and Asian banks, are empowered to invest in the share capital of enterprises in the developing member countries. All three regional development banks can establish, accept, and operate special funds for soft-term lending along the lines of the International Development Association in situations where the normal commercial terms would be inappropriate. However, the resources of such special funds are to be kept separate from ordinary capital resources.

In addition to the three regional development banks, there are a number of subregional development banks in Africa and Latin America. The Central American Bank for Economic Integration, an institution within the framework of the Central American Common Market, came into being in 1961. The East African Development Bank, an institution of the East African Community, began operations in late 1967. In 1968, the six Latin American countries belonging to the Andean Group formally agreed to set up the Andean Development Corporation to speed their economic integration. Most recently the Caribbean Development Bank was established in January 1970. These banks have functions broadly similar to those performed by the regional banks for a much wider membership. The subregional banks, however, seem to concentrate more on integration projects than do the regional banks.

[Excerpted from Regional Development Banks, International Conciliation. New York: Carnegie Endowment for International Peace, No. 576, January 1970, pp. 5-18.]

The African Development Bank

John White

[The African Development Bank has gotten off to a difficult start, hampered by limited funds and cautious lending policies. Despite these weaknesses, the bank is a truly African bank grappling with the issues of African development.]

The African Development Bank, like the Asian and Inter-American banks, was shaped largely by the historical circumstances which led to its creation. But there is one important difference. Whereas the effective perceptions in the creation of the other two banks were those of the developed countries, the African bank was shaped almost exclusively by African perceptions of their problems and needs. In the late 1950s, an attempt had been made to expand the role of the United Nations in development financing, by means of a proposal to establish a Special United Nations Fund for Economic Development (SUNFED). This proposal had been deflected by the creation of the International Development Association as a soft-loan fund within the World Bank Group, where weighted voting gave the principal subscribers a controlling say in the distribution of funds. For the African countries, the failure of the SUNFED proposal was particularly disappointing. They had looked to the United Nations, with its principle of equal voting rights for all members irrespective of size of contributions, as the one forum in which they could enter into the international development debate on more or less equal terms.

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At the All-African Peoples' Conference held in Tunis in January 1960, it was proposed that a special development fund might be set up for Africa. A resolution was adopted in favor of the "setting up of an African investment bank to promote development projects." The proposal was taken up again in February 1961 and the ECA unanimously adopted a resolution requesting its executive secretary, Mr. Robert Gardiner, "to undertake a thorough study of the possibilities of establishing an African Development Bank and to report to the Commission at its next session." The executive secretary initiated a number of studies and he assembled a panel of experts to write a report.

In 1962 the ECA experts recommended that the Commission attempt to establish a bank. Through the rest of that year an ECA Committee of Nine consulted with the African countries, the developed countries and international development agencies to ascertain their views. As was to be expected, the African governments indicated some wide divergences of view. First, the francophone countries tended to be skeptical about the whole proposal. The committee attributed these doubts to French disapproval, which was subsequently confirmed to the committee by French officials in Paris. Secondly, it became clear that most governments were interested in the proposal primarily because they assumed that it would create an additional channel for increasing the flow of financial resources from the developed countries. Several governments emphasized that the African subscriptions should be kept low and that the bank should operate primarily with special funds provided by the developed countries. Finally, there was a wide variety of views concerning the participation of non-African countries, ranging all the way from admitting them as full members to excluding them even from the administration of any special funds that they provided.

The team that went to Western Europe appears to have received little more than a polite hearing. The Scandinavians favored the proposals, but they reminded the committee that their own resources were limited. The West Germans declined to take up a firm position until they had some evidence of the institution's progress. The Belgians, the French, the Dutch and the British were in varying degrees skeptical. The Soviet Union and the United States were more enthusiastic. The Americans made several specific suggestions but indicated that the non-involvement of the developed countries might present problems. The Russians were more cautious, and in discussing the question of non-African membership they insisted on equality of voting rights. The fear of involving the proposed institution in a dispute between the U.S. and the Soviet Union strengthened the committee's view that membership should be confined to Africans. Besides, unlike the Inter-American

and Asian banks, an African bank could not be floated with American help. The discussions with African governments had shown that French approval, or at least tolerance, was vital. Antipathy between France and the United States at that time was particularly sharp. To suggest that the proposal rested in any way on an American initiative would have been the end of it.

The Committee of Nine prepared a series of reports on its missions and in January, 1963, adopted a draft agreement which was distributed to the African governments for comment. The draft was closely modeled on the precedents of the World Bank Group and the Inter-American bank, combining elements of all of these institutions together with some of the features of the Inter-American bank's Social Progress Trust Fund. In July, 1963, the finance ministers formally convened in Khartoum to consider the draft.

At the Khartoum conference there was relatively little discussion of the technicalities. Two broad issues occupied much of the conference's attention. Those were membership and the scope of the bank's operations. On membership, the conference more or less unanimously supported the view that had developed in the Committee of Nine in favor of excluding non-African countries. The question of members' voting rights proved more contentious, but the view of the weightier countries, which was naturally in favor of weighted voting, prevailed. Article 65 of the agreement adopted by the conference stated that the agreement would enter into force upon the deposit of instruments of ratification or acceptance by 12 signatory governments whose subscriptions amounted to not less than 65 percent of the authorized capital stock. In accordance with this provision, the bank formally came into existence on 10 September 1964, when the accession of Algeria brought the aggregate subscriptions to the required level.

Structure

The articles of the African bank constitute a broadly permissive document, which left it free to evolve in accordance with perceived priorities and within the limits of whatever constraints should materialize.

Membership, subscriptions and voting rights. Membership in the African bank is confined to independent states of the African continent and adjacent islands. The articles do not refer explicitly to South Africa, but it was resolved at Khartoum that South Africa should not be eligible "until its Government has terminated its apartheid policies." The subscriptions of member states were fixed at Khartoum in accordance with a formula based on population, gross national product, foreign trade and government revenue.

In order to avoid extreme disparities, minimum and maximum subscriptions were set at the equivalents, respectively, of $1 million and $30 million. The bank's authorized capital stock is 250 million units of account, a unit of account being equivalent to $1 defined at its current value in gold. The capital stock is divided into 25,000 shares, with a par value of $10,000 each. Half of these shares are subject to call when required by the bank to meet its obligations. The other half of the capital stock is in the form of paid-up shares, which are payable wholly in gold or convertible currency. (In the IBRD, in the Inter-American bank, and in the Asian bank, part of each subscription is payable in the currency of the member country.)

Voting rights are weighted in such a way as to give the smaller members more than a proportionate share of the total voting power. Each member has 625 votes plus one vote for each share that he holds. A member with the maximum subscription of $30 million will have 3,625 votes, or five times the voting power of the smallest member, although his subscription is 30 times greater. Decisions on most subjects, both in the Board of Governors and in the Board of Directors, are decided by a simple majority of the voting power of those present.

Aims and functions. The stated purpose of the African bank is "to contribute to the economic development and social progress of its members—individually and jointly." The bank is to give "special priority" to: "1) projects or programs which by their nature or scope concern several members; and 2) projects or programs designed to make the economies of its members increasingly complementary and to bring about an orderly expansion of their foreign trade." The explicit attempt to broaden the scope of the bank's operations, by empowering it to go beyond the strict confines of project-financing, was an innovation; but in practice the bank has kept fairly strictly to specific projects, and has not devoted much attention to the possibilities of "global" loans, and similar programmatic devices. The bank's functions also include the mobilization of additional internal and external resources, the promotion of public and private investment, and the provision of technical assistance, especially in the preparation of projects.

Resources. For the first few years of its life, the bank relied on the paid-up portion of its subscribed capital. The total capital subscribed by members who had joined by the end of July 1971 was $220,400,000. One half of this, or $110,200,000, was in the form of paid-up shares. The amount already called, as installments fell due, was $108,500,000. Most members, however, were persistently behind with their payments, while a few, notably the UAR, appeared to have deliberately stopped subscribing. As a result, the

amount actually paid in was $79,654,652, or 72 percent of the amount due. [Note: figures in this and the next paragraph and in the Table were updated by the Development Digest using the Bank's 1972 Annual Report.]

Staff. In staffing the bank, the president is required to try to recruit Africans, especially for the senior posts. In spite of the relative shortage of experienced financial administrators in Africa, and the fear that the bank might draw away key people from national administrations, this provision has been interpreted fairly strictly. By the end of 1967, the bank had recruited 61 professional staff, of whom 59 were from member countries. In addition, 19 technical assistance experts, contributed by multilateral and national assistance agencies, serve on a full-time basis with the bank.

Operations. The articles of the African bank give it a high degree of operational freedom. It may provide finance "for any member, political sub-division or any agency thereof or for any institution or undertaking in the territory of any member as well as for international or regional agencies or institutions concerned with the development of Africa." It may make or participate in direct loans, invest in equity, or guarantee loans made by others. Although it may not finance a project if the government of the country objects, it is not required to seek a government guarantee. It is thus free to operate nationally or internationally, in the public or private sector, with loans or equity finance. The articles impose certain limitations, however, which give rise to questions of interpretation. In spite of the assertion in Article 2 that the bank may invest in projects or programs, the article on operational principles confines the bank to "specific projects, or groups of projects." A partial exception is allowed in the case of "global loans to. . . African national development banks or other suitable institutions." In all its operations, the bank is required to apply "sound banking principles."

The tone of its loan policy was set in the opening paragraph of the Introduction to the statement on "Loans and Investments:" "The policies and procedures outlined in these pages conform in large measure to those in force in other regional and international lending agencies. This has not been the result of unquestioning adherence to established norms, but rather a reflection of the sincere belief of the management that these policies are sound in principle and have stood the test of time and experience."

Evolution

The bank opened its doors for business on 1 July 1966. It signed its first loan agreement in August 1967, amounting to $2,300,000, for up-grading roads on the Kenya-Uganda and Kenya-Tanzania bor-

ders. By 30 June 1968, when the bank had been installed for just over three years and in business for two, the Board of Directors had approved the financing of $5,400,000 for four projects, one of which was a technical and economic study. By December 31, 1971, when the bank had been installed for five and a half years, 25 projects had been approved. The total finance to be provided was $48,735,496 (see below).

CREDITS APPROVED, AFRICAN DEVELOPMENT BANK, DECEMBER 31, 1971

Borrower	Purpose, Date Signed	Amount ($)
Government of Kenya	Construction to type 1 bitumen standard of two international roads in Kenya, 8/8/67	2,300,000
Government of Tunisia	Preparation and development of 4 irrigation sectors in the Medjerda Valley, 2/8/68	2,750,000
Government of Uganda	Engineering studies for water and sewerage schemes in urban centers other than Kampala and Jinja, 6/9/68	300,000
Public Utilities Authority, Liberia	Purchase and installation of a second gas turbine, 25/2/70	1,350,000
Government of Malawi	Development of Tedzani Falls Hydro Electric System, 9/3/70	3,000,000
	Interest capitalized	26,810
Guma Valley Water Co. Sierra Leone	Extension of water supply, 25/5/70	1,500,000
Banque de Developpement du Mali	To enable B.D.M. to take equity participation in ITEMA, 6/7/70	540,000
	Commission and interest capitalized	27,686
Government of Morocco	Reinforcement and extension of power transmission lines Jerada/Zaër, 28/7/70	2,800,000
Government of Uganda	Financing of water supply in 18 urban centers, 29/8/70	3,000,000
Pan African Paper Mills Co. (E.A.) Ltd.	Providing part of working capital for the company, 23/9/70	1,450,000
Government of Niger	Improvement and extension of telecommunications systems, 6/5/71	1,000,000
Rural Development Corporation of Zambia	Farm development projects, 2/12/71	700,000
Government of Sudan	Financing of foreign exchange cost of construction of 3 livestock export quarantine stations, 7/12/71	800,000
Government of Sudan	Financing of foreign exchange cost of procurement of rolling stock, 7/12/71	2,800,000
Government of Kenya	Construction to two-lane bitumen standard of a 72 km. road between Yala and Busia townships, 9/12/71	3,000,000
Government of Somalia	Construction of second highway project, 10/12/71	1,000,000
East African Development Bank - Uganda	Line of credit for financing of projects in the pipeline,—*	2,000,000
Air Afrique	Co-financing of the purchase of 2 DC 10-30 type aircraft, —	5,000,000
Government of Chad	Financing of foreign exchange cost of Tchador project, —	431,000
Banque Nationale de Developpement de la Haute Volta	Line of credit for financing foreign exchange cost of industrial projects, —	2,000,000
The Caisse Algerienne de Developpement	Line of credit for financing a dairy plant project, —	3,000,000
The Caisse Algerienne de Developpement	Construction of a bituminized road between El-Golea and In-Salah, —	3,000,000
Tanzanian Italian Petroleum Refining Co. Ltd. (TIPER)	Financing of foreign exchange costs of the construction of a pipeline and tankage facilities, —	3,000,000
Societe Ivoirienne d'Engrais	Construction of a fertilizer plant, —	360,000
Nigerian Sugar Co. Ltd., Bacita	Financing of foreign exchange cost of the company's expansion program, —	1,600,000
	TOTAL	48,735,496

* "—" refers to projects approved but unsigned as of December 31, 1971.

SOURCE: Report by the Board of Directors of the African Development Bank covering the period from 1st January to 31st December 1971.

By comparison with its sister institutions, the African bank's rate of progress appeared excessively slow. The Inter-American bank entered into 73 loan agreements in its first year of operations.

The Asian bank's record was not nearly so startling as that, but it opened its doors for business within a month of its inaugural meeting, and after two years it had committed $43 million under seven loan agreements and 11 technical assistance agreements. Such comparisons are relevant, primarily because they entered into the appraisals of the developed countries. In the preparatory discussions, the developed countries adopted a "wait-and-see" attitude. Subsequently, they continued to argue that they could not give the African bank more than tentative support so long as it appeared to be still feeling its way.

However, comparisons in these terms are thoroughly misleading. The African bank cannot be compared with the relatively luxuriously endowed Inter-American bank. The Asian bank started with nearly five times the resources of the African bank, admittedly for a much more populous area. More significantly, the participation of the developed countries gave it greater financial security. If these factors are taken into account, the rates of progress of the African and Asian banks were roughly comparable. Such comparisons ignore variations in the extent to which preparatory work had been done in the member countries of the three institutions. The Inter-American bank is alleged by officials in other institutions to have had a large number of projects fed to it in the early years, mainly by U.S. aid agencies. While this was not the case with the Asian bank, it is certainly true that project identification was less of a problem in Asia than in Africa.

The competition for projects. The articles of the African bank require it to give a special priority to multinational projects. At the same time, the articles are deliberately vague on the question of what this means, so that on a liberal interpretation any project that benefits more than one country can count. This vagueness is potentially valuable. The Committee of Nine, and the participants in the Khartoum conference, were well aware that African integration requires more than the building of a few roads or the establishment of a few telecommunications links across national boundaries.

At the outset, the management of the bank was aware of this too. Careful thought was given to the question of how the bank should best exploit the wide range of choice allowed to it under its articles. With a wide range of choice, the bank—or, more accurately, its president—developed a wide range of useful ideas, some of which were subsequently developed in more sharply focused explorations. Three criteria for the selection of projects were uppermost. First, there was a search for projects which would contribute to the linking of African countries, not merely physically, but also in terms of markets. Secondly, in some key sectors, there was a healthy ques-

tioning of established financial practices, with a view to finding the most appropriate developmental method of operation. Finally, it was firmly held that the bank's first few projects should be conspicuously "bankable," in order to attract the confidence of the developed countries. The first of these criteria, however, was difficult to apply. It was found that one or two projects which would have implied a forceful interpretation of the "multinational" requirement—for instance, a refrigeration plant in Upper Volta which would have obviated the need to export meat to the Ivory Coast on the hoof—could not be financed without involving the bank in political disputes over the location of projects, which it could not afford. At the same time, the second and third criteria were to some extent in conflict with the requirement that projects should be "bankable."

On the face of it, this merely meant, following World Bank practice, that the bank should give preference to projects with a good economic return, taking the internal rate of return as the crucial measurement. However, the bank was working within such tight limits that it tended to look for revenue-earning projects, in which there was a quick financial return which could be demonstrated within the framework of conventional investment appraisal. The simple and obvious reason for this was the smallness of the bank's effective resources. The bank simply could not afford to experiment, for fear that its resources might be exhausted before the success of the experiment had been demonstrated. Certainly the conventional notion of a project financing needed fundamental rethinking in the African context, especially in relation to such questions as sectoral emphasis, the role of the lending agency, required types of borrowing agency, local cost, recurrent costs, etc. But the African bank, with severely limited resources, was not equipped to take on such a task. It could not afford the double risk of losing its reputation and its money.

One way round the difficulty would have been to engage in parallel financing, with the bulk of the external finance for each project coming from bilateral aid or from another international agency, and with the bank providing, in addition to a small share of the total finance required, technical and coordination services. This would also have satisfied the requirement that the bank should act as an agency for mobilizing additional resources. If this course had been adopted, however, it would have blurred the edges of the bank's separate identity. More seriously, only the U.S. was really prepared to cooperate.

A major problem which the bank faced was how to persuade its members to look to the African bank rather than to other, larger sources of aid. Most African countries had sources of aid which could be secured on softer terms than those of the African bank.

But a more seriously inhibiting factor was the relative lack of identifiable sound projects. The African bank was not the only institution in Africa hunting for projects with an assured high rate of return. About the time when it was established in Abidjan, the World Bank set up two regional offices, one in Abidjan and one in Nairobi, precisely in order to intensify the search for projects which would fit its criteria. These criteria were more or less the ones adopted in practice by the African bank. The World Bank's Abidjan office had been located there in principle to promote cooperation between the two institutions. The real situation was one of open competition and mutual suspicion. The World Bank's Abidjan office was staffed mainly with engineers and other technicians, whose experience hardly equipped them to appreciate the political problem of relations between the two institutions. But even at a higher level there was little understanding.

In this account of the bank's approach to project selection, attention has been focused on the dilemmas which confronted the African bank at every stage. What seems a gloomily complex picture, however, is really very simple. Once the bank had decided to concentrate on project finance, the drift towards an increasing emphasis on "bankable" projects was inevitable. This in turn linked the bank more and more closely with the international family of (non-African) financial institutions, and deflected attention from the need to find a firm place for itself within the African family of international political institutions, notably the ECA and the OAU.

Why did this happen? The answer lies in the smallness of the bank's resources, which forced it from the outset to develop, or seek to develop, all sorts of external links. Even so, the course of events was not inevitable. There was an alternative, in the possibility of a broader approach addressed to needs at the national level. The adoption of such a course would have taken the bank more deeply into the politics of African unity. Far from being an undesirable development, this was one of the main purposes for which the bank was set up. In terms of the bank's limited resources, an approach of this kind would have had to be addressed primarily to the bank's smaller and weaker members, which were also, of course, its smallest subscribers. This is an approach the bank did try. One of the most interesting strands in the evolution of the bank is the progress of its thinking on what it euphemistically calls its "relatively less developed member countries," and what the French call more bluntly. . .

Les demi-etats. There are at least three non-economic reasons why it should be natural for the African bank to give priority to its smaller members: (1) the smallness of its own resources suggests that it should concentrate on limited tasks; (2) the bank has a com-

mitment to multinational projects but if it does not simultaneously tackle the problem of disparities between countries, there is a danger that a concentration on multinational projects will merely reinforce an existing bias in favor of the established centers of economic growth; and (3) the external vulnerability of the demi-etats, their almost total dependence on the continuing good will of the former metropolitan powers can be moderatdd only by an African bank-like institution.

In July 1966 the management submitted to the Board of Directors a proposal for an "accelerated program" on behalf of the smaller members. It pointed out that the fragmentation which came with independence had been especially damaging to the smaller economies and proposed a program to overcome these problems. In so doing, the bank came close to identifying a long-term role for itself. In selected countries, the program was to have three main objectives. First, it would be aimed at developing key sectors in a manner that would strengthen and diversify the economy as a whole. Secondly, it would seek to reintegrate the economies of neighboring countries, mainly through the coordination of their decision-making processes. Finally, though this was less clearly stated, the bank would act as a financial agent for these countries in their negotiations with other sources of aid. To these ends, the bank proposed the establishment of a professional task force for each selected country. In addition to providing technical assistance, it was proposed that the bank should set aside a part of its own resources for lending on relatively favorable terms.

The proposal was not well received. Officials in the developed countries argued that the bank was over-reaching itself. There were doubts concerning the proposed concentration of the bank's resources, and the proposed departure from strict banking criteria. Accordingly, the proposal was reformulated. The new formulation reduced the proportion of the bank's own resources to be set aside for the program from 25 percent to 15 percent of its capital, and it was recognized that "the success of the Program would depend on the Bank's ability to mobilize additional resources." The earlier emphasis on the construction of a comprehensive planning framework gave way to a focus on "helping the countries in the preparation of bankable and aid-worthy projects," and an immediate concern with "the determination of the order of priorities, the identification of strategic sectors and the formulation of programs for such sectors to enable early action to be taken." This more practical approach was balanced by a more explicit recognition of the political context of the proposal, in the abandonment of somewhat artificial economic criteria in favor of a simpler identification of those members of the bank "whose subscriptions are below a certain amount."

This shrinking of the bank's ambitions had a deleterious effect on its evolution. The Board of Governors made the mistake of regarding the bank primarily as a technical and financial institution; and seen in this light it was bound to appear less well endowed for the job than almost any alternative agency. The aid-giving countries made the same mistake, and therefore failed to see why they should channel resources through the bank when those same resources could be applied more swiftly and probably more "efficiently" within the framework of established bilateral relations.

Prospects. Throughout this account of the African Development Bank, the emphasis has been on the problems which it faces and on its failure to resolve them. Indeed, the historical record of the institution is replete with but blocked initiatives and unresolved dilemmas. By comparison with the Inter-American bank, and even with the Asian bank, the African bank appears at first sight to be fatally lacking both in momentum and in the resources by which momentum might be generated. But the future is not so gloomy as that picture might make it seem. The problems of the African bank are the hard-core problems of a regional institution whose function is to provide a developmental focus for its members. These problems have weighed on the African bank because the African environment and the circumstances which led to the bank's creation combined to place it at the center of Africa's historical search for its own pattern and style of development. If the Asian and Inter-American banks appear more stylish, if they seem to have progressed with greater institutional momentum, it is not because they have overcome the problems of a regional bank, but rather because they have never even encountered them. In terms of the political perspective within which this study is contained, the African bank appears in the long term to hold the greatest promise of the three institutions, precisely because in the short term it appears as the most problematical.

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NON-TARIFF TRADE BARRIERS

INADEQUATE HARBORS, SUCH AS THIS ONE AT BUENA VENTURA, COLOMBIA, ARE AMONG THE NON-TARIFF BARRIERS TO TRADE
[PHOTO: PAUL ALMASY, THREE LIONS, INC.]

Means of Reducing Non-Tariff Trade Distortions

Robert E. Baldwin

[International prosperity is threatened by the recent increase in discrimination against foreign producers and the subsidization of domestic producers. GATT members should meet to renew their commitment to the principle that quantitative restrictions should not be used to regulate international trade, and they should agree to revise and extend GATT regulations on non-tariff trade barriers.]

The increasing interest in public policies other than tariffs that distort international trade is but one manifestation of the growing international economic interdependence of nations. In a narrower sense it is the result both of a greater use by governments of non-tariff measures that impede trade and of a general reduction in tariff levels. [See Development Digest, July 1972, pp. 82-88.] Most of the peaks that remain in the structure of protection among industrial countries are caused by non-tariff restrictions in such industries as agriculture, coal, petroleum, cotton textiles, shipping, shipbuilding and benzenoid chemicals. There are strong pressures, particularly in the United States, to extend some of these restrictions to other manufacturing lines, especially woolen products, man-made fibers and shoes.

Broad Policy Changes

The most important changes mandatory to any significant reduction in non-tariff trade distortions

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(and also a further deep cut in tariffs) go beyond the field of commercial policy. Greater exchange-rate flexibility must be introduced into the international monetary system, and much more effective domestic programs must be devised to enable workers and management to adjust to the sharp economic pressures that accompany shifts in the structure of production.

Trade-Distorting Policies/Practices

(1) Quotas and restrictive state-trading policies — The practice of some governments (not just communist governments) of monopolizing foreign trade in certain commodities; for example, the French government controls all imports of coal.

(2) Export subsidies and taxes.

(3) Discriminatory government and private procurement policies — Regulations that effectively discriminate against foreign suppliers not only on government purchases but sometimes on private purchases through such devices as "buy British" and "buy American" campaigns.

(4) Selective indirect taxes.

(5) Selective domestic subsidies and aids.

(6) Restrictive customs procedures — Rules and regulations for classifying and valuing commodities as a basis for levying import duties.

(7) Antidumping regulations — Procedures for determining whether dumping is being practiced and for dealing with it.

(8) Restrictive administrative and technical regulations — Customs and antidumping procedures are part of these regulations that need not distort trade but are sometimes used to do so. Included are safety regulations for machinery and vehicles; health regulations covering food, plants and pharmaceutical products; and trade mark and patent rules.

(9) Restrictive business practices — The most widely known is international collusion among producers for the purpose of sharing markets and raising prices. Recently a new problem has been raised by international corporations that engage in trade-distorting business practices outside observable market channels. By allocating costs among their international subsidiaries in arbitrary ways, underpricing sales within the corporation and arranging informal market-sharing agreements among their subsidiaries, giant multinational corporations may carry out monopolistic practices that public authorities are unable to detect.

(10) Controls over foreign investment — Regulations which discriminate against foreign-owned firms, and controls by the home-government of foreign subsidiaries.

(11) Restrictive immigration policies.

(12) Selective monetary controls and discriminatory exchange-rate policies — For instance, under the prior import deposit regulation introduced by the United Kingdom in 1968, importers must deposit with the customs authorities for six months the equivalent of 50 percent of the value of their imported goods. Such a scheme also exists in Japan and many of the less developed nations.

Exchange-rate flexibility. Greater exchange-rate flexibility is needed both to prevent the increased use of non-tariff trade-distorting measures and to facilitate the reduction of existing barriers. The present political difficulty of changing exchange rates except in periods of severe financial crisis and of pursuing deflationary domestic policies vigorously seriously handicaps the major trading nations in handling their balance-of-payments problems. If greater flexibility is introduced, it would ease the pressure to use non-tariff trade-distorting policies for balance-of-payments purposes. Balance-of-payments difficulties may still sometimes be used as an excuse for introducing protectionist measures. Improving the adjustment mechanism will not, of course, eliminate the pressures for such actions but will at least make them more obvious.

Adjustment assistance. A more effective adjustment assistance program is another important policy change necessary to any significant cut in non-tariff impediments to international

trade. Most non-tariff trade-distorting policies, other than those introduced for balance-of-payments purposes, are protecting domestic industries that are threatened by competitive market forces. Often these pressures come from other domestic industries, but foreign producers are used as scapegoats and must overcome tariff and non-tariff barriers in order to compete in the protected markets. Any sharp reduction in these trade distortions is likely to result in significant income and unemployment hardships to those employed in the depressed industries. In the absence of an effective adjustment assistance program, the short-run income and redistributional losses may outweight the long-run income gains that a reduction of trade distortions could provide.

Current adjustment assistance programs in many countries are grossly inadequate for providing a reasonable degree of income and employment assistance to employees and employers in depressed industries. Consequently, it is not surprising that the barriers protecting these industries have not been reduced in recent GATT (General Agreement on Tariffs and Trade) negotiations. Large-scale programs of income support, education and retraining, technical assistance, employment and marketing information, low-interest loans, and the like are needed to enable countries to take advantage of the economic benefits from technological progress and international trade without imposing severe economic costs upon particular groups.

Commercial Policy Changes

The framers of the GATT sought primarily a reduction in tariff barriers; their concern with non-tariff measures was mainly to prevent their use to offset the benefits of tariff cuts. The rules of conduct pertaining the specific non-tariff measures are consequently often quite general and vague. Now that these measures are relatively more important, the GATT rules covering various commercial policies need to be modified and elaborated.

Import quotas. A fundamental principle of GATT is that quantitative restrictions should not be used to regulate international trade. Those who formulated the Articles of Agreement considered quotas and other quantitative restrictions more trade-distorting than tariffs and they specified that except on most agricultural products or for national security reasons, new quantitative restrictions could be introduced only temporarily for balance-of-payments or development purposes. Although GATT's quota provisions have eliminated the elaborate quantitative controls imposed during and immediately after World War II for balance-of-payments purposes, they have been less successful in reducing quotas designed to protect economically weak industries.

Potential market disruption through foreign competition ought to be handled through domestic adjustment-assistance programs. Failing an adequate program of this sort, a temporary increase in duties rather than the introduction of quotas is preferable to the hidden consumer costs associated with quotas, as well as the windfall gains that they bring to traders. Thus the GATT should be amended to condemn the use of quotas to meet the pressures of market disruption, and the members of GATT should reiterate their opposition to quotas generally.

Export subsidies. Within the last few years both the United Kingdom and France have used general export subsidies for balance-of-payments purposes. These subsidies are preferable to quantitative controls but—like general import levies used alone—they distort the allocation of resources among the export, import-competing and purely domestic sectors of an economy. Permitting some exchange fluctuation or introducing uniform subsidies and levies for exports and imports is a better method of handling moderate balance-of-payments difficulties since these measures do not distort the allocation of resources. Article XII of the GATT, dealing with restrictions to safeguard the balance of payments, should be reformulated to reflect this order of preference. As it is now, a country may impose quantitative controls over imports without being subject to retaliatory action from other countries, but if it introduces a uniform export subsidy, it is subject to retaliation.

Two inadequately regulated areas of selective subsidization are those for primary-product exports and the interest and repayment terms for export credits and guarantees. Export subsidies for agricultural products that are subject to domestic price support programs may raise rather than lower world income if the domestic program alone would inhibit exports. Should the subsidization go beyond its optimal level, however, it would reduce world income. Because the short-term prospects are not at all favorable for reducing the distortions arising from the basic domestic agricultural problem that plagues most industrial countries, the best practical step is to strengthen the confrontation, fact-finding and justification procedures of the GATT governing export subsidies for agricultural products.

Government procurement. One of the first responses of governments to balance-of-payments difficulties is to tighten their restrictions on purchases of foreign produced goods. The measures adopted by the U.S. government in raising the preference percentage for domestically produced goods and in tying almost all foreign aid to domestic production are representative of this response in a number of countries. The result has been to reduce imports somewhat but only at the price of significantly increasing the cost of goods pur-

chased by the government (as well as significantly decreasing the purchasing power of foreign aid) and thus increasing the tax burden on the general public.

Because of the recent increase in restrictive government purchasing practices and because present GATT rules on discrimination specifically exclude public purchasing, a guidelines agreement is very much needed in this field. The key principle is that government purchasing policies should—subject to certain derogations—be based on non-discrimination against foreign products and suppliers of foreign products. In order to implement this general principle, governments must agree to a number of reforms in their purchasing procedures and practices. Public bidding should be employed to a much greater extent. Whenever selective tendering is used, vigorous efforts should be made to insure that all interested foreign suppliers have an opportunity to apply for inclusion on the list of potential bidders. Procurement notices should be more widely distributed, and time limits or technical requirements in these notices should not discriminate unnecessarily against foreign firms. Residence requirements for bidding should be liberalized. All bids under public and selective bidding procedures should be made public except where such action would clearly make subsequent collusion possible, would result in the disclosure of confidential information, or would result in significant administrative difficulties. Furthermore, rejected bidders should be given more information concerning the reasons why their bids were turned down than they presently are in many countries.

Border adjustments for taxes and subsidies. The present GATT rule concerning border tax adjustments permits countries to introduce export rebates and import levies to compensate for indirect taxes but not for direct taxes. It has been argued that this rule is proper for direct taxes and selective indirect taxes. Border adjustments in response to changes in general indirect taxes such as value-added or turnover taxes are equivalent to changes in a country's exchange rate for the trade account. Therefore, the criterion for determining whether such changes are appropriate is the present or foreseeable condition of the country's balance of payments. The present rule ignores the balance of payments and takes into account only one factor that may affect it, namely, a change in the level of general indirect taxes. In an economy with a fixed floor for money wages and an inflexible exchange rate, this can lead to border adjustments that actually move the major trading nations further away from a reasonable international equilibrium in their payments balance.

Border adjustments in response to changes in general direct taxes should not be permitted for two reasons. First, the latest

empirical studies as well as traditional economic theory suggest that an increase in general direct taxes (accompanied by an equivalent increase in government expenditures or cut in other taxes) will not result in any significant change in the balance of payments. Secondly, if a greater degree of exchange-rate flexibility is introduced, any unfavorable repercussions on the balance of payments from changes in direct taxes can be offset through the exchange-rate mechanism.

The GATT rule that permits adjustments at the border for changes in indirect taxes is appropriate for selective indirect taxes. If these adjustments were not allowed, considerable economic hardship might be imposed on selected groups. Compensation should be required, however, where the tax causes a significant net decline in income in any foreign country. Ideally, border adjustments should also be made for changes in selective indirect domestic subsidies. The GATT rule on domestic subsidies does not require this action but states only that each member agrees to discuss the possibility of limiting subsidies that are found to seriously prejudice the interests of other members. The reason for the asymmetry in treatment of taxes and subsidies is fairly obvious. Selective taxes are imposed to raise revenue to provide economic assistance either to the industry taxed or to other sectors of the economy. Selective subsidies are designed to provide economic assistance only to the industry or sector subsidized. Border adjustments mitigate the economic hardships imposed by the tax and raise additional revenue as well, whereas they would partly offset the objective of the subsidy. Since a change in GATT rules that would partly offset the purpose of domestic subsidies and also help foreign producers is unlikely, the best alternative is to give all other countries the automatic right to request compensating concessions from any country that increases the degree of subsidization of a particular domestic sector unless the subsidy serves to improve the allocation of resources. If satisfactory compensation is not forthcoming, the other countries should have the right to impose countervailing import duties or export subsidies on the products being subsidized.

Domestic aids. No development in the field of non-tariff trade distortions is more disturbing and complicated than the rapid growth in government aids to producers. Some have been introduced primarily to improve payments positions, a few to offset previous trade concessions. Most of the increased aid, however, has resulted from a greater sense of public responsibility for improving economic conditions for those employed in depressed industries or regions and raising growth rates both generally and in selected industries. Even though domestic production subsidies are introduced for worthy purposes, they may still affect trade adversely. Under the existing GATT rule, which does not require border adjustments for such sub-

sidies, a production subsidy has the same effect on trade as an export subsidy or import tax. Consequently, the progress made in recent years in rationalizing the pattern of international trade by reducing tariffs and export subsidies may well be offset by these government supports (accidentally by the side effects of domestic policies or quite deliberately through the loopholes in the rules of GATT).

Customs valuation practices. Although it is difficult to determine quantitatively just how important customs valuation practices are in distorting trade, there is no doubt that certain of them rank among the greatest irritants to traders. The practice most condemned within the last few years has been the American selling price system which values imports according to American prices rather than foreign prices. The average duty on benzenoid chemicals was, as a consequence, increased from a nominal level of 40 percent in 1964 to an actual level of 65 percent. Elimination of the American selling price system has become a symbol of the seriousness of the United States' intention to negotiate in the non-tariff field. The tentative agreement to eliminate this valuation practice signed by the Kennedy Round negotiators has thus far not been validated by Congress.

Other customs procedures in need of harmonization among countries include tariff classification systems and the basis of valuing goods. All countries should adopt the Brussels Tariff Nomenclature for their tariff classifications. The United States and Canada are the only major trading nations that do not use this system. Other countries should switch to an f.o.b. basis for valuing imports, adopting the U.S. practice of excluding freight and insurance, and the Brussels Definition of Value should be changed accordingly. Levying duties on freight and insurance—as is done under a c.i.f. system—tends to result in an inefficient use of world transportation resources.

Antidumping regulations. One of the few non-tariff trade matters that industrial countries have taken steps to deal with is the sale of products abroad at prices lower than are charged domestically. The best method of preventing dumping is to eliminate or harmonize tariff and non-tariff barriers within industries and to enforce domestic antimonopoly laws vigorously. This will make it impossible for producers to charge higher prices at home than abroad. An effective adjustment assistance program is also essential to a comprehensive program; if assistance were available to domestic producers in countries receiving dumped goods, greater weight could be given to the benefits that accrue to consumers as a result of lower prices. Antidumping rules—like many other GATT rules—are based on the assumption that what is good for a particular group of pro-

ducers is good for the country as a whole. Provided that these producers are able to receive effective adjustment assistance when needed, dumping laws should be changed so that the welfare of the country becomes the criterion of whether antidumping duties should be imposed. Predatory and sporadic dumping would then be the main forms of dumping subject to these duties.

Technical and administrative regulations. The host of other administrative rules established by governments that sometimes have the effect of restricting trade includes safety rules for machinery and vehicles, health regulations for food and drugs, marking regulations and patent laws. Efforts have been underway for years in some of these fields to establish standardized regulations. However, the rapid pace of technological change and the lack of vigorous support of these efforts by governments has slowed progress. Negotiations on these matters should be tied in with negotiations on other trade-distorting measures. They could be carried on within the framework of GATT or within other existing international organizations. Clearly, complete standardization of these rules will not be possible among countries with differing health and safety goals, but many divergences in rules can be eliminated and better mechanisms set up for airing and resolving complaints.

Changes in GATT Structure and Procedures

If the recommended changes in non-tariff trade-distorting measures are to be sought, the vehicles for these changes must be made adequate to the task. The GATT must be revised and extended to provide detailed international codes or rules of acceptable behavior governing non-tariff trade restrictions. In addition, an effective mechanism must be established to insure that new trade-distorting measures are not introduced as well as to facilitate multilateral negotiations designed to reduce existing distortions. The GATT confrontation and justification procedure must be improved if rules on non-tariff matters are to be more effective. The prime requirement is, of course, that the countries involved fully support the code. In addition, the GATT secretariat must provide vigorous leadership in directing fact-finding efforts and in suggesting possible compromises to conflicts among nations. The major countries must help GATT to expand its presently small staff considerably and to secure the best talent available in the commercial policy field. The GATT secretariat also must take the lead in assembling and analyzing the data that will be required for successful multilateral negotiations designed to reduce the trade-distorting impact of non-tariff measures. Careful economic analyses employing modern tools and concepts will be needed, and "gripe lists" of non-tariff barriers should be only an elementary prelude to in-depth studies.

There must also be a procedure for insuring the implementation of the behavior code that goes beyond confrontation and justification. Where the latter approach is ineffective, a fact-finding panel of experts should be established to render a non-binding judgment on the consistency of any particular measure or action with the behavior code. The members of GATT should collectively take retaliatory action against an offending member after carefully weighing the opinion of the panel and taking into account any relevant general foreign policy considerations.

[Excerpted from Nontariff Distortions of International Trade. Washington, D.C.: The Brookings Institution, 1970, pp. 10-12, 170-181, 183-186.]

Non-Tariff Barriers and Export Performance of Developing Economies

Ingo Walter

[There is considerable preliminary evidence to suggest that the developing countries are relatively susceptible to non-tariff measures applied to imports of manufactures by advanced countries, and that the structure of protection and quasi-protection indicated by these obstacles may well be systematically—if unintentionally—biased against them.]

The problem of increasing, diversifying and stabilizing the export earnings of less developed countries (LDCs) has been a major interest both to development planners and to those concerned with the evolution of international trade relations. A central determinant of LDC export performance and growth is their ability to secure expanded, reliable access to developed country markets for manufactures and semi-manufactures—access that is governed in large measure by the trade policies pursued by these countries. It is convenient to group the instruments of trade policy into tariff and non-tariff measures, and to consider as the primary focus for market access the developed countries of Western Europe, North America and Australasia. Tariff levels maintained by these countries have in general declined markedly over the past two decades, and are subject to further reduction through the UNCTAD General Scheme of Preferences for developing countries. Nevertheless, the developing nations have maintained that much of the recent tariff liberalization—and even the national and group preference offers—have continued to exclude products

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of present or potential export interest to them, and that effective rates of protection have remained high due to wide differentials in rates of duty applied to imports of products at different levels of processing.

The alleged NTB discrimination against developing countries is attributed to two basic sources. First, the impact on the developing countries of a variety of non-tariff obstacles to imports tends to be disproportionately severe in comparison with their impact on competing developed countries. The basis for this argument includes the following: (a) The LDC suppliers often are less able to cope with such obstacles than their competitors in advanced countries, since their capability of affecting the requisite adjustments is notably more limited. (b) Alternative production possibilities tend to be restricted or essentially non-existent for the developing economy. (c) Developing countries often do not have sufficient resources to determine precisely the nature of existing non-tariff measures and the mechanics of their administration, resulting in faulty and costly supply responses, a high degree of uncertainty, and a corresponding dampening of the export effort. (d) In certain product areas extraordinarily rigorous standards and procedures may be applied to imports from developing countries, particularly with respect to health and quality controls. (e) The interests of developing countries have tended to assume a secondary role in ongoing intergovernmental attempts to deal with non-tariff obstacles. With respect to the last point, it may be argued that the GATT procedure—relying on notifications by member countries on non-tariff measures affecting their exports—places the developing countries at a fundamental disadvantage. This notion, in addition to their inherently weak bargaining position and the fact that many developing countries are not contracting parties to the General Agreement, underlies the position that non-tariff obstacles of special concern to the developing countries may not receive adequate emphases in this particular international forum.

Second, besides the possible disproportionate impact of NTBs on LDCs as a result of the vulnerabilities of the latter, it may be that non-tariff obstacles more often fall on manufactured or semi-manufactured products or product groups of particular export interest to the developing countries than they do on manufactured and semi-manufactured products supplied largely by the industrial countries. That is, manufactured and semi-manufactured products most frequently subject to non-tariff barriers tend to be precisely those in which the developing countries presently have, or are likely to establish in the near term, a competitive advantage in the international market.

Vulnerability of Developing Countries to NTBs

With respect to the first line of reasoning—that limited adjustment capabilities, greater vulnerability to uncertainty, and more restricted knowledge of the nature and application of NTBs generally results in a disproportionate impact of NTBs on developing-country suppliers compared with their developed-country competitors—one must rely almost entirely on qualitative and subjective evaluation. The findings of a series of six detailed product studies conducted for UNCTAD seem to suggest the following: In the case of quantitative import restrictions, any such differential may be attributed to the administration of quotas and discretionary licensing of imports. The issuance of import permits frequently favors "traditional" sources of supply and importers having long-standing relationships with certain foreign producers, thereby limiting market access by new suppliers from developing countries. Permissible quota sizes may be unknown or subject to activation under a variety of explicit or implicit trigger mechanisms. The quantity of allowable imports may be highly variable over time, import calendars may be employed, or "buyers' quotas" may be used under which each allocation is too small to service efficiently. Such administrative techniques frequently appear to result in unfilled quotas as developing-country suppliers, faced with a high degree of uncertainty, are frustrated in their efforts to gain improved and stable market access.

Even relatively liberal or quasi-automatic licensing of imports sometimes seems to impose a significant burden on developing countries due to complexities involved in securing import permits, attendant costs, delays in issuance, variations in the period of validity, and disclosure requirements as to final purchaser and price. "Voluntary" export restraints, backed by the threat of mandatory import controls, as yet [1970] seem to affect relatively few developing countries or product groups of export interest to them. But current application of this device to textiles, netting, plastics, porcelain articles, cutlery and electronic components may intensify, and the limited bargaining power of the individual developing countries would leave them little choice but to acquiesce.

In the case of public and quasi-public procurement, limited publication of tenders, short bidding times, wide discretion allowed purchasing authorities and development aid tied to purchases in the donor country appear to have a disproportionate effect, but in a relatively narrow range of products. At the same time, export restrictions intended to deny raw materials or intermediates to foreign processing industries seem to have had a deleterious effect on textile processing in certain developing countries and may increase in connection with offshore manufacturing in low-labor-cost areas by firms based in the industrial countries.

There are a number of other NTBs whose impact in individual cases also appears to be asymmetrical. Variable import levies and surcharges imposed by the EEC and a number of individual developed countries on processed agricultural products frequently involve abrupt shifts in magnitude and considerable difficulties in calculating the precise amount of the levy, rendering almost impossible advance determination of import charges. Advance-deposit requirements and credit restrictions on purchases from abroad may fall more heavily on importers with weak financial backing, while developing countries are in a fundamentally disadvantageous position in competing with direct or indirect subsidies granted to exporters or import-competitors and their suppliers in developed nations.

A similar pattern is found in the case of non-tariff obstacles not necessarily implemented with protective intent. Technical standards imposed on a variety of products (e.g., plywood, fertilizers, electronic components) appear to be a problem, although packaging and labelling regulations, safety standards and sanitary requirements are frequently much more striking in this regard. For LDC suppliers, variations in standards and the requisite short packaging runs and high tooling and design costs can represent a heavy burden. Health requirements are an even more serious concern for developing countries, specifically with regard to processed food products. It is difficult for them to cope with variations in national regulations concerning permissible content of insecticides, certain chemicals, food additives, coloring and bacteria count, problems compounded by non-recognition of national inspection standards and occasional explicit discrimination at the customs frontier.

Finally, the standard argument concerning indirect taxation and border tax adjustments may also carry unusual implications for developing countries. Not only do most developing countries fail to apply a system of drawbacks of charges bearing on exported products—thereby failing to meet one of the conditions for non-distortive application of the "destination principle" of taxation in international trade—but the fiscal exigencies of individual LDCs in addition often lead to the imposition of taxes on exports. It can therefore be argued that manufactured and semi-manufactured products imported from certain developing countries bear an extraordinarily heavy tax burden on final sale.

Differential Incidence of NTBs on Developing Countries

The second line of reasoning—that there exists a great deal of overlap as between manufactures and semi-manufactures particularly subject to NTBs and products of export interest to developing

countries—lends itself somewhat more readily to investigation. One approach involves cataloging the known non-tariff measures which bear on manufactures and semi-manufactures that are applied by each of the developed market-economy countries.

In 1968, the developed market-economy countries imported approximately $128 billion in manufactures and semi-manufactures, of which about 28 percent ($36 billion) were subject to known NTBs. In the same year, 33 percent of the $21 billion of manufactured and semi-manufactured imports from developing countries entered under such obstacles. Put another way, the developing countries' share of manufactured and semi-manufactured imports of the developed countries in 1968 was 16.5 percent, but their share of imports subject to NTBs was 20.9 percent. Acceptance of the earlier proposition that certain NTBs on individual products or product groups bear dispro-

Table 1

1968 Imports from Developing Countries Subject to NTBs: Manufactures and Semi-Manufactures

Imports of:	Share of Developing Countries in Total Imports (%)	Share of Developing Countries in Imports Subject to NTBs (%)
U.S.	18.6	23.5
Canada	6.8	3.5
Australia	12.5	7.9
New Zealand	10.8	2.0
Japan	43.2	58.4
U.K.	22.9	13.9
Norway	7.5	2.2
Sweden	9.1	6.2
Denmark	7.2	4.7
Finland	2.7	6.8
Austria	3.0	3.5
Switzerland	5.5	13.1
EEC (from non-members)	7.5	13.7
Belgium-Luxembourg	15.0	27.6
France	17.9	37.9
F. R. Germany	17.0	6.9
Italy	25.0	4.3
Netherlands	11.7	4.3
Total	16.5	20.9

Data: Classification of non-tariff barriers by application of products grouped by SITC 5-digit identification, see Liberalization of Tariff and Non-Tariff Barriers, Document TD/B/C.2/R.1 (Geneva: UNCTAD, 10 December 1969), Annex II. Trade data: U. N. Statistical Papers, Series D. Commodity Trade Statistics (New York: U.N., 1969); and OECD Statistical Papers, Series C, Foreign Trade Statistics (Paris: OECD, 1969). Definition of manufactures and semi-manufactures, see UNCTAD document TD/B/C.2/3 of 2 July 1965.

Table 2: Incidence of Non-Tariff Measures on Imports of Manufactures and Semi-Manufactures, Selected Countries, 1968[a/]

Countries	Ex. 0 Processed foods	Ex. 1 Beverages and tobacco	Ex. 2 Crude materials	Ex. 3 Fuels and lubricants	Ex. 4 Oils and fats	Ex. 5 Chemicals	Ex. 6 Manufactures classified chiefly by material	Ex. 7 Machinery and transport equipment	Ex. 8 Misc. manufactures	Ex. 9 Products not elsewhere classified	Ex. 0-9 Total manufactures and semi-manufactures
United States											
Total	21.4	93.3	0.2	97.6	32.0	69.4	23.5	16.5	40.5	78.5	44.3
LDC	9.2	92.5	-	99.5	-	31.6	6.4	1.4	64.7	15.4	66.9
United Kingdom											
Total	27.2	56.9	-	-	-	1.9	31.0	17.8	29.6	100.0	19.3
LDC	28.6	32.8	-	-	-	1.4	15.3	34.0	54.3	100.0	9.6
Japan											
Total	100.0	92.7	100.0	70.9	-	55.1	35.6	45.0	17.8	-	35.6
LDC	100.0	98.7	100.0	85.4	-	83.9	86.6	36.8	7.4	-	57.7
EEC External[b/]											
Total	90.2	93.0	-	-	76.1	16.0	-	-	-	-	3.0
LDC	77.7	98.9	-	-	0.6	17.5	-	-	-	-	3.9
F. R. Germany[c/]											
Total	62.8	71.6	-	-	-	5.1	16.8	28.1	23.8	3.4	18.0
LDC	50.5	97.3	-	-	-	6.8	14.9	44.7	52.0	-	10.6
France[c/]											
Total	70.7	91.4	44.5	100.0	44.2	33.7	19.6	39.1	47.9	-	43.8
LDC	81.1	98.7	83.8	100.0	-	25.5	11.8	61.6	68.3	-	72.7

Data: See Table 1.

a/ Percent of manufactured and semi-manufactured products in the indicated product groups, weighted by OECD imports, covered by each area's non-tariff measures, total and from developing countries in 1968.

b/ Non-tariff measures bearing on imports from non-member countries only.

c/ Excluding EEC non-tariff measures bearing on imports from non-members.

portionately on developing country suppliers and tend to reduce their actual market share would mean that the hypothetical latter figure is even larger relative to the former. But even assuming the imposition of non-tariff measures had no effect on relative import shares, it would appear that product groups for which developing countries hold a relatively large share of developed country imports are also characterized by a comparatively intensive application of NTBs and hence that imports from developing countries do indeed tend to be somewhat more heavily subject to such measures than do developed country imports in general. Table 1 indicates, however, that there are substantial variations in the figures as among the individual markets, and what is true for the total holds for only half of the individual importing areas.

There is also a good deal of variation in the incidence of NTBs applied by the advanced countries among products. This is indicated by an examination of the application of non-tariff measures to imports of major manufactured and semi-manufactured product groups for each of 17 developed countries under consideration, using as a measure of incidence the proportion of individual items under a given product heading subject to NTBs as weighted by OECD imports.

Data for a few representative countries are given in Table 2. For the U.S., Japan and France, for example, the incidence of NTBs on imports from developing countries is significantly higher than on imports in general. In the U.S. case, this is due to concentration of NTBs in petroleum products and textile garments; in Japan it may be attributed to heavy applications of such measures on these same groups plus beverages and tobacco, certain chemicals and textile yarns and fabrics, while the French cost is mainly attributable to a heavy NTB incidence on processed foods, beverages, tobacco and wood products. Even in countries where the overall incidence of non-tariff measures on developing countries is not significantly higher or is even markedly lower than average (e.g., F.R. Germany), instances of differential incidence always exist in individual product groups, particularly various light manufactured articles, semi-finished products and intermediates, processed agricultural products, beverages and tobacco.

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